CCD-F201/F365/F365PAK
RMT-506

SERVICE MANUAL

US Model
Canadian Model
CCD-F201
E Model
CCD-F365/F365PAK

Handycam
Video 8
U MECHANISM

CCD-F201/F365 is the model which adds remote control functions to CCD-F45/F360.
In this service manual, the differences between CCD-F201/F365 and CCD-F45/F360 are described.
When servicing, see the CCD-F45/F46/F360 service manual with this.

Mainly difference portion
1. RM-53 board addition
2. Connector addition on RC board (RC-29 → RC-47)
3. Microprocesser(IC651) change on CK board

The name and part number of the following pc boards differ from those of CCD-F45/F360, but schematic diagram and mounted wiring boards of the pc boards are the same as those of CCD-F45/F360.

Pc boards of CCD-F201/F365		Pc boards of CCD-F45/F360	
Name	Part number	Name	Part number
CD-70	1-639-439-11	CD-17	1-631-823-14
CK-53	1-639-440-11	CK-19	1-631-824-14
DK-17	1-639-444-11	DK-4	1-631-825-13
KS-14	1-639-446-11	KS-6	1-631-827-13
CC-66	1-639-448-11	CC-26	1-631-829-13
VK-21	1-639-447-11	VK-3	1-631-828-14
MA-108	1-639-445-11	MA-37	1-631-826-15
PS-289	1-639-449-11	PS-225	1-631-830-14

Note: Parts of CCD-F45/F360 are supplied
for replacement on those boards
except CK-53 board.

8 VIDEO CAMERA RECORDER

SONY®

MICROFILM

SPECIFICATIONS

System

Video recording system	Rotary two heads, Helical scanning FM system
Audio recording system	Rotary head, FM system
Video signal	NTSC color, EIA standards
Usable cassette	8 mm video format cassette
Tape speed	SP mode: Approx. 1.43 cm (1/16 inch)/sec. LP mode: Approx. 0.72 cm (1/32 inch)/sec. (playback only)
Recording time	SP mode: 2 hours (P6-120)
Playback time	SP mode: 2 hours (P6-120) LP mode: 4 hours (P6-120)
Fast forward/rewind time	Approx. 6 min. 30 sec. (P6-120)
Image device	CCD (Charge Coupled Device)
Viewfinder	Electronic viewfinder (black and white)
Lens	Combined 8 x power zoom lens f=8.5 to 68 mm (11/32 to 2 3/4 inches) F 1.6 with macro Filter diameter: 46 mm (1 13/16 inches)
Auto focus system	TTL
Color temperature	AUTO, HOLD 💡 (indoor) 3,200 K ☼ (outdoor) 5,800 K
Minimum illumination	3 lux
Illumination range	3 lux to 100,000 lux (0,3 to 9294 footcandles)
Recommended illumination	More than 100 lux (9 footcandles)
Aperture correction	Automatic With backlight adjustment

Input and output connector

Video output	Phono jack, 1 Vp-p, 75 ohms unbalanced sync negative
Audio output	Phono jack −7.5 dBs, impedance less than 2.2 kilohms
RFU DC OUT	Special minijack, 5V DC
Video input	Phono jack, 1 Vp-p, 75 ohms unbalanced, sync negative
Audio input	Phono jack, −7.5 dBs, input impedance more than 47 kilohms
Earphone jack	Minijack, 8-ohm impedance
Remote ◐ jack	Stereo mini-minijack
MIC jack	Minijack, −66 dBs, low impedance with 2.5 to 3 V DC output, impedance 6.8 kilohms
Microphone power output jack	Special minijack, 5 V DC

Note :
CCD-F365PAK is a model that carring case is added in CCD-F365.
Only accessories and packing materials are different from those in CCD-F365.
See page 26.

General

Power requirements	On battery mounting surface 6.0 V (battery pack) 7.5 V (AC power adaptor) 9.0 V (alkaline batteries)
Power consumption	6.9 W (camera recording) including the viewfinder
Installation	Vertically, horizontally
Operating temperature	0°C to 40°C (32°F to 104°F)
Storage temperature	−20°C to +60°C (−4°F to +140°F)
Dimensions	Approx. 122 × 153 × 317 mm (w/h/d) (4 7/8 × 6 1/8 × 12 1/2 in.) including hood
Weight	Approx. 1.2 kg (2 lb 10 oz) excluding the battery and cassette
Microphone	Electret condenser microphone, monaural type

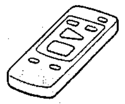
Wireless Remote Commander

Remote control system	Infrared control
Command mode	VTR 2
Power requirements	3 V DC, 2 size AA (R6) batteries
Dimensions	Approx. 60 × 25 × 123 mm (w/h/d) (2 3/8 × 1 × 4 7/8 inches)
Weight	Approx. 62 g (2 oz) (excluding batteries)

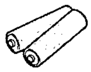
Design and specifications are subject to change without notice.

Please check that the following accessories are supplied with your camcorder.

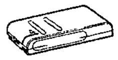
- Wireless Remote Commander (1)



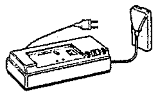
- Size AA (R6) battery for Remote Commander (2)



- Battery pack NP-55 (1)

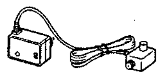


- AC power adaptor AC-V35/V35A (1)

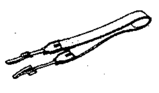


- Lithium battery CR2025 (1)

- **RFU adaptor RFU-90UC (1) (US/Canadian model)**

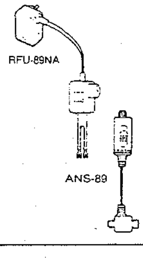


- Shoulder strap (1)



- Lens cap (1) (attached to the camcorder)

- **RFU adaptor RFU-89NA with antenna selector ANS-89 (1)** (E model)



SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer:

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
3. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
4. Look for parts which, though functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
5. Check the B+ voltage to see it is at the values specified.

SAFETY-RELATED COMPONENT WARNING!!

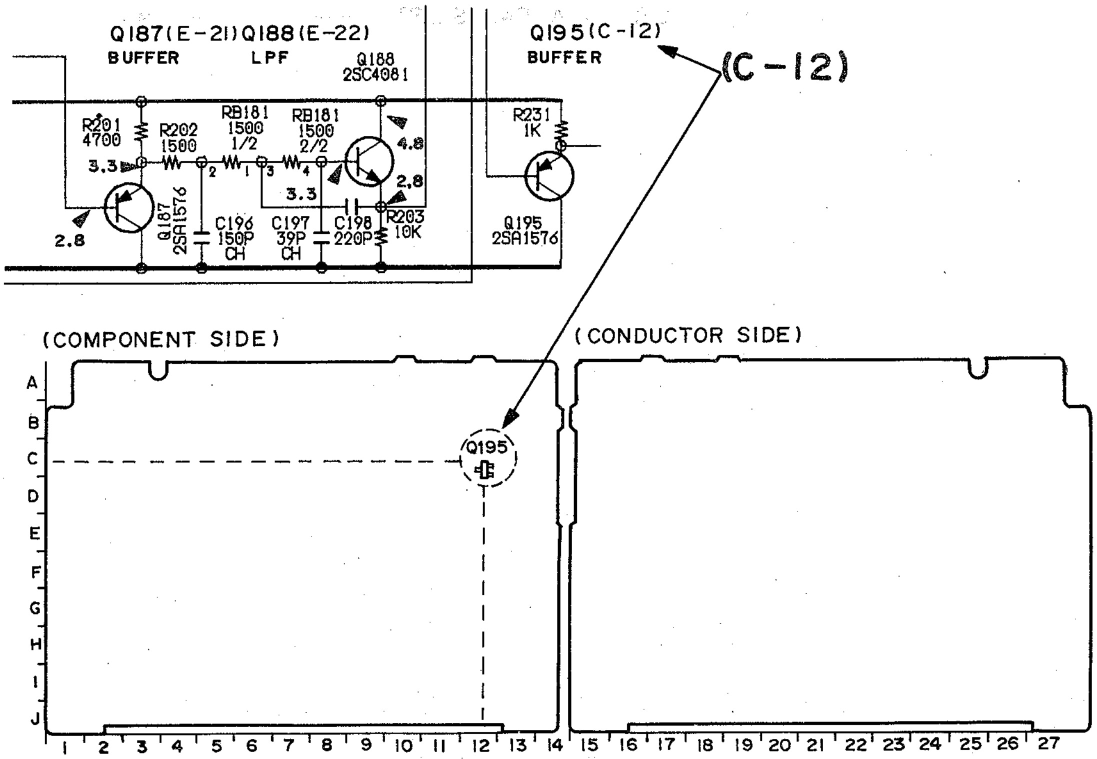
COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

ATTENTION AU COMPOSANT AYANT RAPPORT
À LA SÉCURITÉ!

LES COMPOSANTS IDENTIFIÉS PAR UNE MARQUE ⚠ SUR LES DIAGRAMMES SCHÉMATIQUES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈCES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPLÉMENTS PUBLIÉS PAR SONY.

[SEMICONDUCTOR LOCATION]

In this service manual, the mounted locations of the semiconductors (IC, transistor, diodes) are indicated in red sa shown below. This enables to find the location on the board easily when servicing.


Q187(E-21)Q188(E-22)
BUFFER
LPF
Q188
2SC4081
R201
4700
R202
1500
RB181
1500
1/2
RB181
1500
2/2
3.3
4.8
2.8
3.3
2.8
Q187
2SA1576
C196
150P
CH
C197
39P
CH
C198
220P
R203
10K
Q195(C-12)
BUFFER
(C-12)
R231
1K
Q195
2SA1576
(COMPONENT SIDE)
(CONDUCTOR SIDE)
A
B
C
D
E
F
G
H
I
J
Q195
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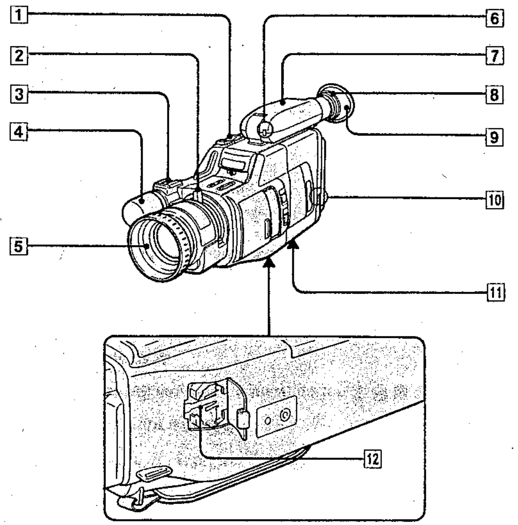
SECTION 1
GENERAL

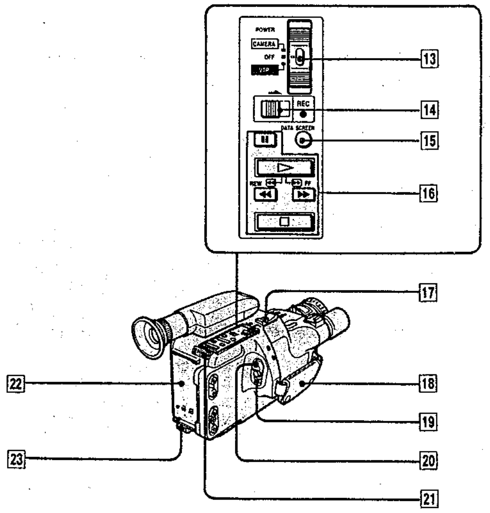
This section is extracted from instruction manual.

Identifying the Parts

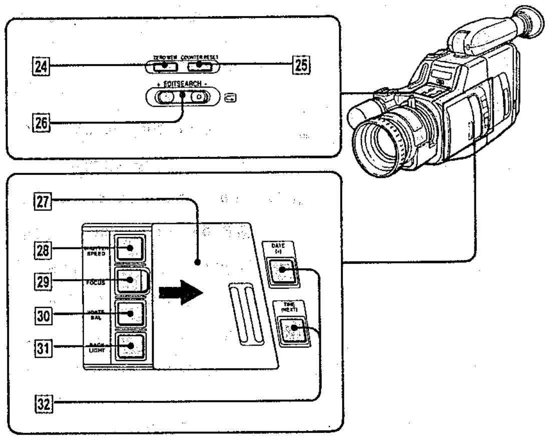
For details on the use of each part, refer to the pages indicated in the circle.



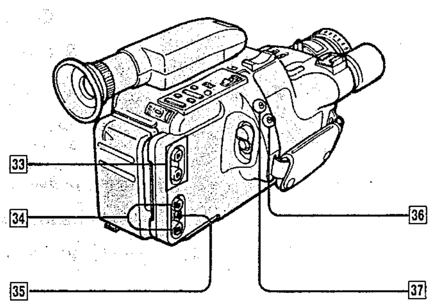
- 1 **Power zoom button ㉟**
- 2 **Zoom lever and Macro button ㉟ ㊱**
- 3 **Accessory shoe ㉗**
- 4 **Built-in microphone (monaural)**
- 5 **Lens hood/focus ring ㉚ ㊲**
- 6 **Camera recording/battery lamp ⑬**
- 7 **Viewfinder ⑪**
- 8 **Viewfinder lens adjustment ring ⑪**
- 9 **Eyecup**
- 10 **BATT (battery eject) knob ⑦**
- 11 **Tripod receptacle (bottom) ㊿**
- 12 **Lithium battery compartment ⑧**



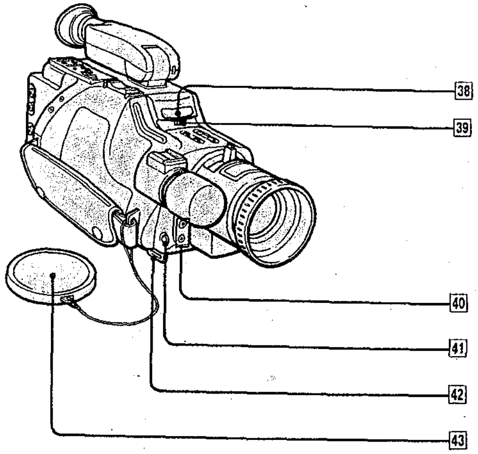
- 13 **POWER switch**
  CAMERA: For camera recording
  VTR: For playing back or editing tapes
  OFF: Power off
- 14 **● REC (recording) switch ㊷ ㊼**
- 15 **DATA SCREEN button ㊵**
- 16 **Tape transport buttons ㊵**
  ▷ (playback)
  ▶▶ FF (fast-forward)
  ◀◀ REW (rewind)
  □ (stop)
  ⏸ (pause)
- 17 **EDIT switch ㊺**
- 18 **Grip belt ⑫**
- 19 **START/STOP button ⑬**
- 20 **STANDBY switch**
- 21 **EJECT (cassette eject) knob ⑩**
- 22 **Battery mounting surface ⑦**
- 23 **Hook for shoulder strap**


24
25
26
ZERO MEM
COUNTER RESET
EDITSEARCH
27
28
29
30
31
32
SHUTTER SPEED
FOCUS
WHITE BAL
BACK LIGHT
DATE (+)
TIME (NEXT)

- 24 **ZERO MEM (zero memory) button ㉕ ㊸ ㊼**
- 25 **COUNTER RESET button ㉕ ㊸ ㊻**
- 26 **EDITSEARCH (and⊜ recording review) button ㉓ ㉔ ㉕ ㉖**
- 27 **AUTO LOCK cover ⑫ ㉘**
- 28 **SHUTTER SPEED button ㉞**
- 29 **FOCUS button ㉚**
- 30 **WHITE BAL (white balance) button ㉜**
- 31 **BACK LIGHT button ㉝**
- 32 **DATE (+) and TIME (NEXT) buttons ⑨ ㉒**


33
34
35
36
37

- 33 **VIDEO/AUDIO IN (input) jacks (phono jacks) ㊷**
- 34 **VIDEO/AUDIO OUT (output) jacks (phono jacks) ㊳ ㊹**
- 35 **RFU DC OUT (RFU adaptor DC output) jack (special minijack) ⑭**
  Supplies power to the RFU adaptor.
- 36 **(earphone) jack (minijack) ㉖**
- 37 **REMOTE control connector (stereo mini-minijack) ㉗**


38
39
40
41
42
43

[38] **Remote sensor** ⑯

[39] **REMOTE COMMANDER ON/OFF switch** ⑯

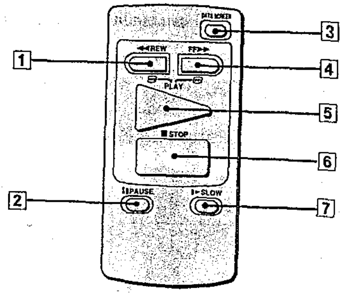
[40] **MIC (microphone) jack (minijack) and DC OUT (power output) jack** ㉗

[41] **REC (recording) START/STOP button (for low-position recording)** ㉒

[42] **Hook for shoulder strap**

[43] **Lens cap**

Wireless Remote Commander


1
2
3
4
5
6
7
DATA SCREEN
◄◄REW
FF►►
PLAY
■ STOP
II PAUSE
I► SLOW

[1] **◄◄ REW (rewind) button** ⑮ ㊵

[2] **II PAUSE button** ㊵

[3] **DATA SCREEN button** ㊵

[4] **FF ►► (fast forward) button** ⑮ ㊵

[5] **▷ PLAY (playback) button** ⑮ ㊵

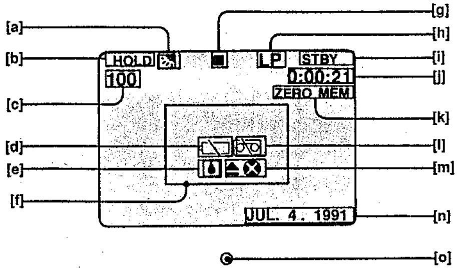
[6] **■ STOP button** ⑮

[7] **I► SLOW button** ㊵

Note
The I► SLOW button is only on the Remote Commander.

Indications inside the Viewfinder

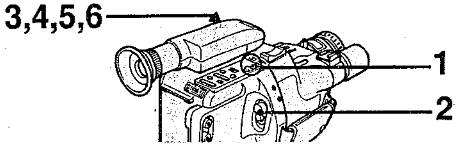
Inside the Viewfinder


[a]
[b]
[c]
[d]
[e]
[f]
[g]
[h]
[i]
[j]
[k]
[l]
[m]
[n]
[o]
HOLD
100
LP
STBY
0:00:21
ZERO MEM
JUL. 4. 1991

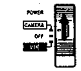
[a] BACK LIGHT is pressed. (▣)
[b] White balance mode (☀, ☼, HOLD)
[c] Shutter speed
[d] "Exchange battery." (▭)
[e] Moisture has condensed. (▣)
[f] Auto focus adjusting range
[g] Shows up during manual focusing.
When blinking: Autofocus malfunctioning
[h] Playback mode (LP or SP)
[i] Tape transport mode
[j] Tape counter
[k] ZERO MEM is pressed.
[l] "Exchange tape." (▭)
[m] "Clean video heads." (⊗/⏏)
[n] Date or time
[o] Shows up during recording.
When blinking: "Exchange battery."

Setting the Date and Time

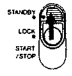
Now, let's adjust the clock inside the camcorder to be able to superimpose date and time onto your video.
Make sure that power source and lithium battery are attached.



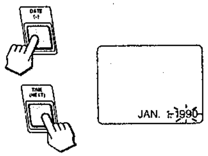
1 **Press the small green button on POWER and slide POWER to CAMERA.**


POWER
CAMERA
OFF
VTR

2 **Push the cover of the red button up until it snaps into STANDBY.**

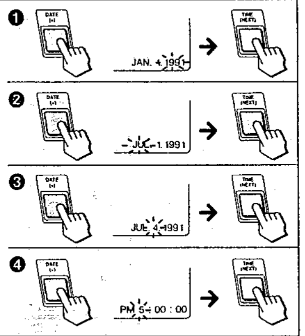

STANDBY
LOCK
START/STOP

3 **Press DATE (+) and TIME (NEXT) simultaneously for more than three seconds until the date indication blinks in the viewfinder.**
DATE button now functions as + (to advance numbers) and TIME button functions as NEXT (to set).

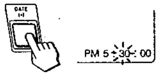

DATE (+)
TIME (NEXT)
JAN. 1 1990

4 **Adjust the flashing digits of the year, month, day, and hour using DATE (+), and press TIME (NEXT).**

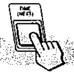
Note
When you keep DATE (+) pressed, the digits advance faster.


❶
❷
❸
❹
DATE (+)
TIME (NEXT)
JAN. 4 1991
JUL. 1 1991
JUL. 4 1991
PM 5 : 00 : 00

5 **Adjust the flashing digits of minute using DATE (+).**


DATE (+)
PM 5 : 30 : 00

6 **Press TIME (NEXT) to set the second to "00".**
The clock starts operating.

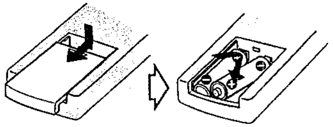


To correct date and time setting Repeat steps 3 to 6.

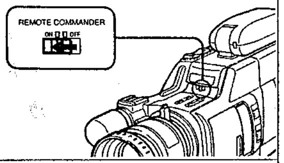
Using the Remote Commander

By using the Remote Commander, you can conveniently control the playback of your tape from a distance.

1 Insert two size AA (R6) batteries with correct polarity.



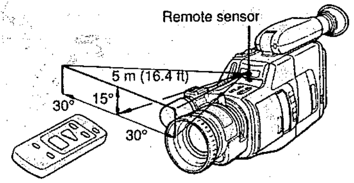
2 Set REMOTE COMMANDER ON/OFF on the camcorder to ON.



3 Set POWER on the camcorder as follows:

When playing back, slide POWER to VTR.

4 Point the Remote Commander to the remote sensor of the camcorder and press the appropriate button on the Commadner.

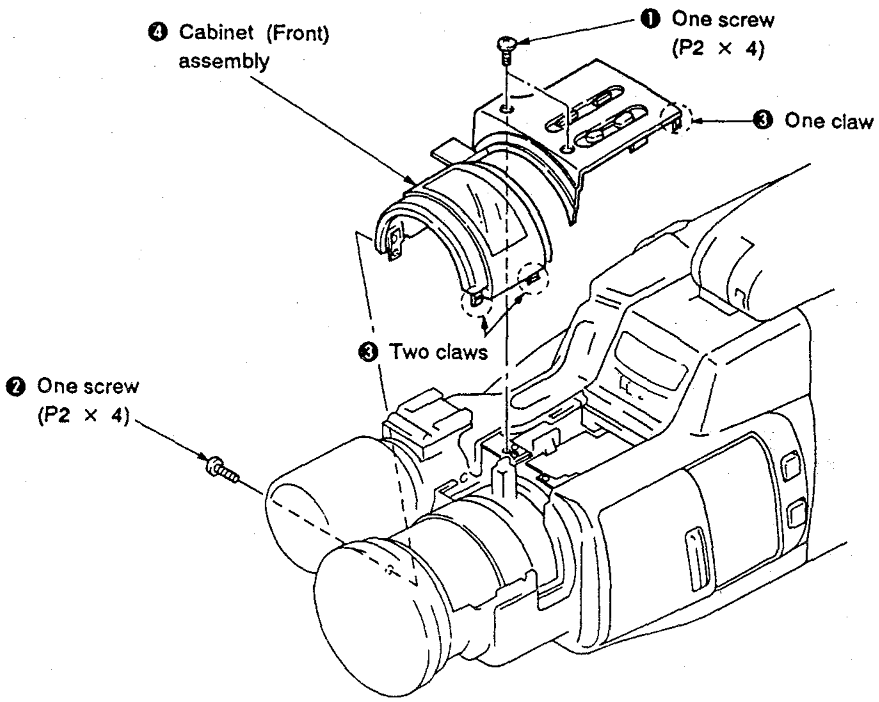


(Guide of remotely controllable area)

Battery life	In normal operation, batteries will last up to six months. If the camcorder does not operate properly, the batteries might be exhausted. Replace both batteries with new ones.
To avoid damage from possible battery leakage	Remove the batteries when you will not use the Remote Commander for a long time.
When you connect the receiver of a remote control kit	When you connect the receiver of a remote control kit (not supplied) to the REMOTE ↻ control connector, be sure to set REMOTE COMMANDER ON/OFF on the camcorder to OFF.
Notes on the Remote Commander	• Keep the remote sensor away from the strong light source such as direct sunlight or illumination. Remote control with the Commander may not be effective. • Be sure that there is no obstacle between the remote sensor and Commander. • The command mode of the Commander is VTR2. Avoid to use the Sony VCRs with the same command mode at the same time.

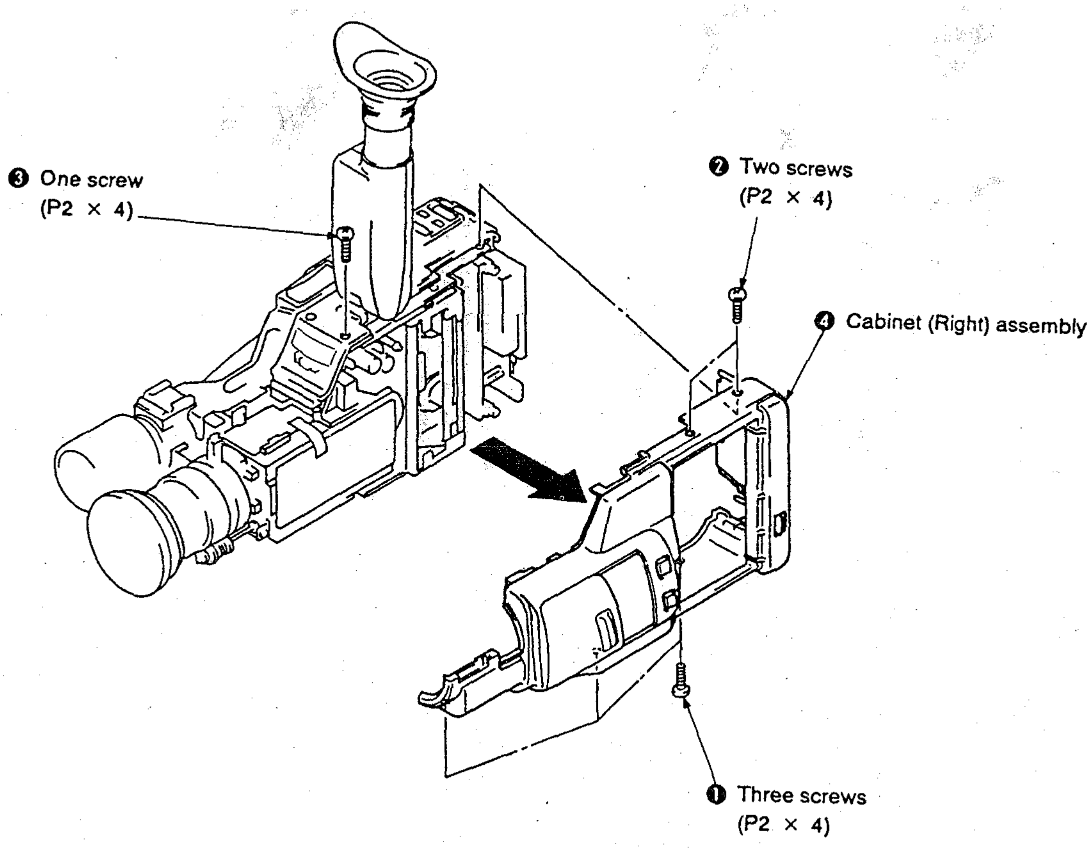
SECTION 2
DISASSEMBLY

2-1. REMOVAL OF CABINET (FRONT) ASSEMBLY

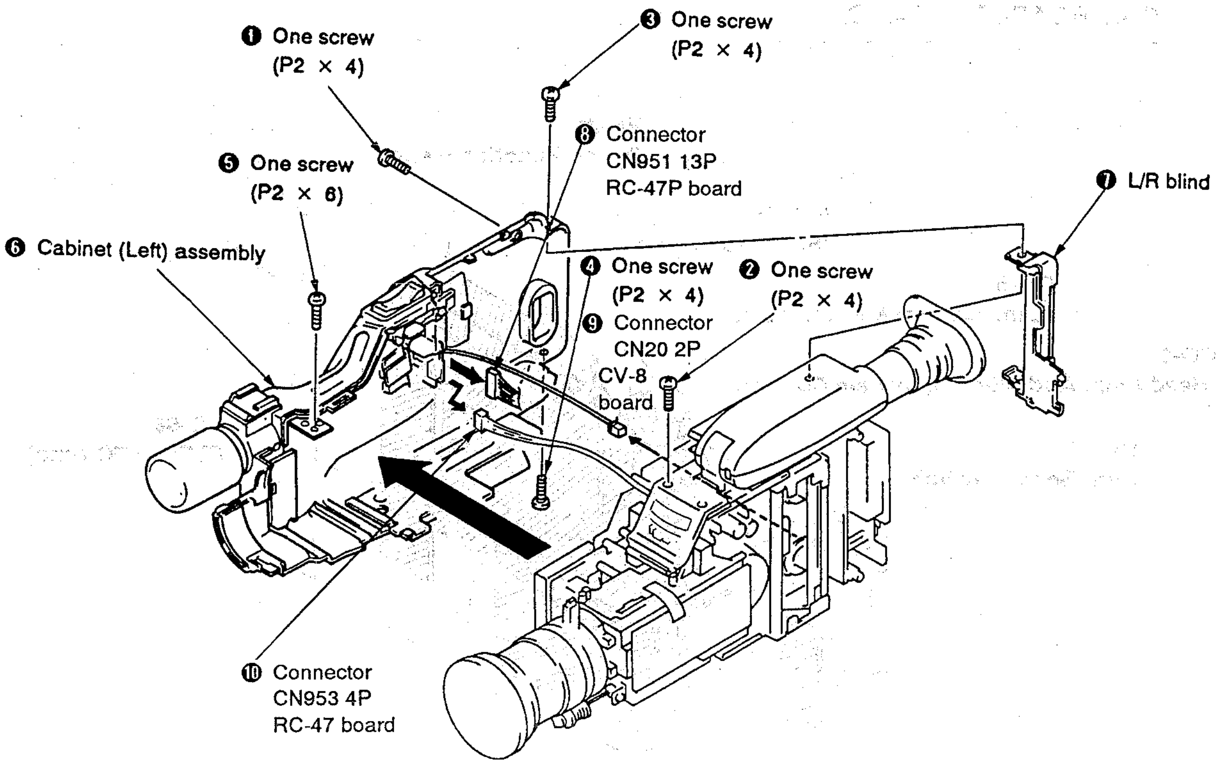

④ Cabinet (Front) assembly
① One screw (P2 × 4)
③ One claw
③ Two claws
② One screw (P2 × 4)

2-2. REMOVAL OF CABINET (RIGHT) ASSEMBLY

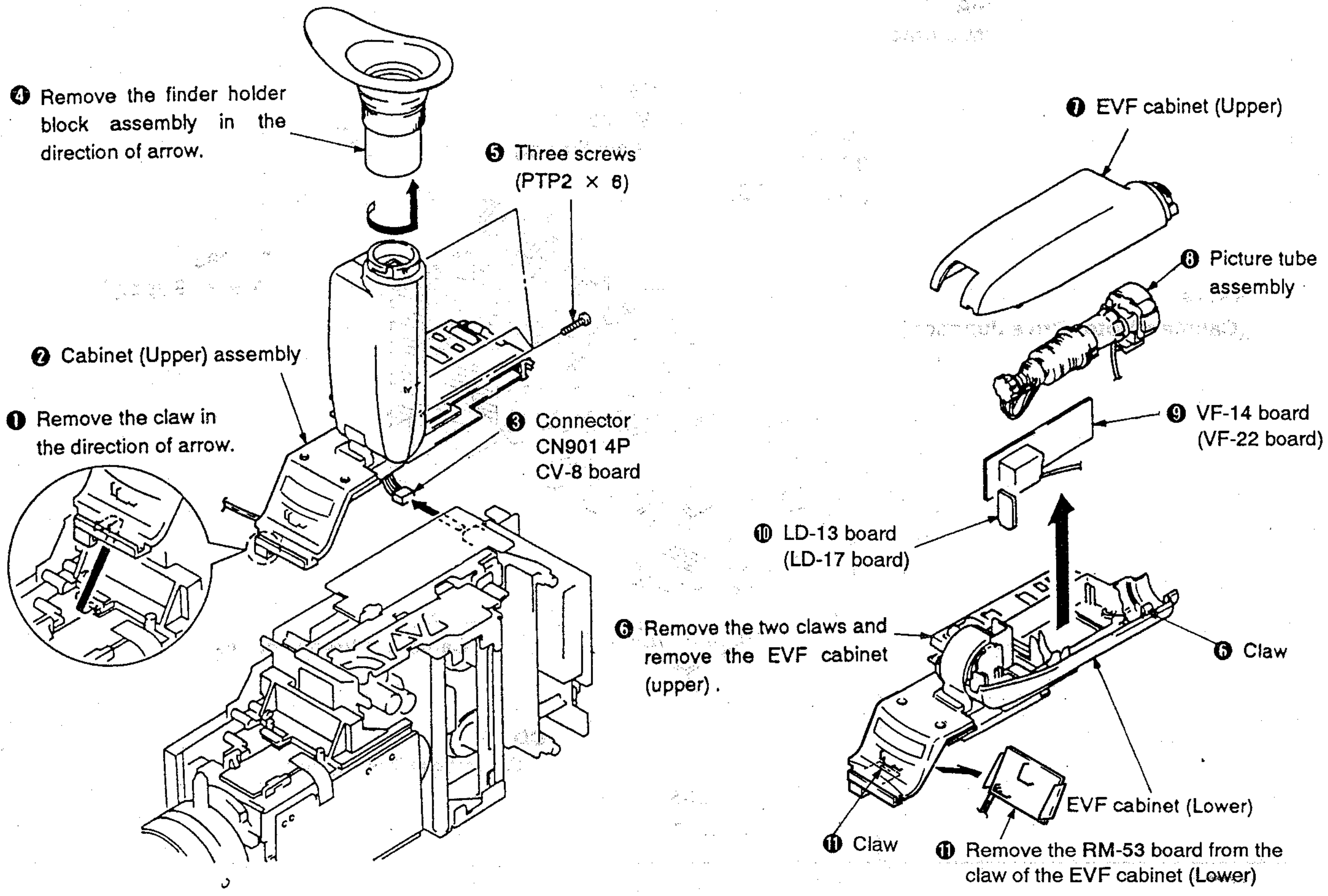
Note: Perform this servicing with EVF raise as the figure below.


③ One screw (P2 × 4)
② Two screws (P2 × 4)
④ Cabinet (Right) assembly
① Three screws (P2 × 4)

2-3. REMOVAL OF CABINET (LEFT) ASSEMBLY

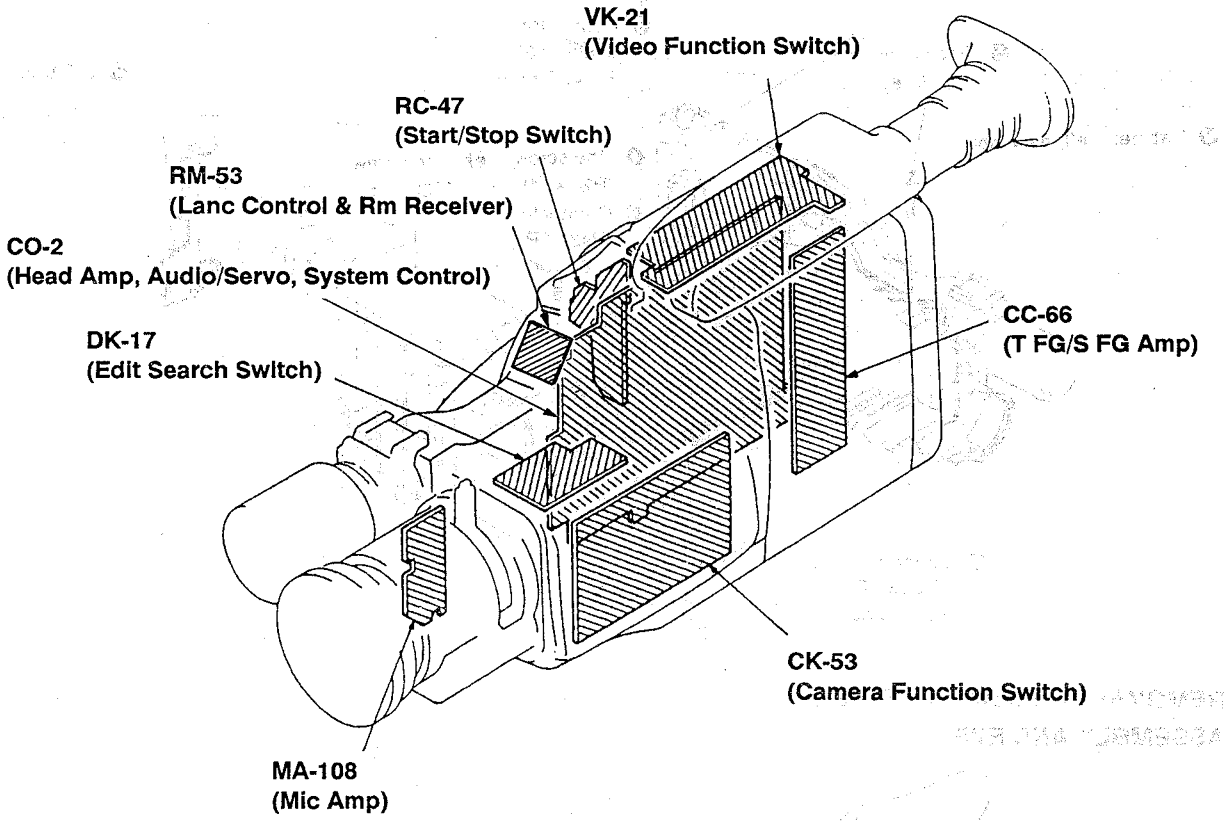

❶ One screw (P2 × 4)
❸ One screw (P2 × 4)
❽ Connector CN951 13P RC-47P board
❺ One screw (P2 × 6)
❼ L/R blind
❻ Cabinet (Left) assembly
❹ One screw (P2 × 4)
❷ One screw (P2 × 4)
❾ Connector CN20 2P CV-8 board
❿ Connector CN953 4P RC-47 board

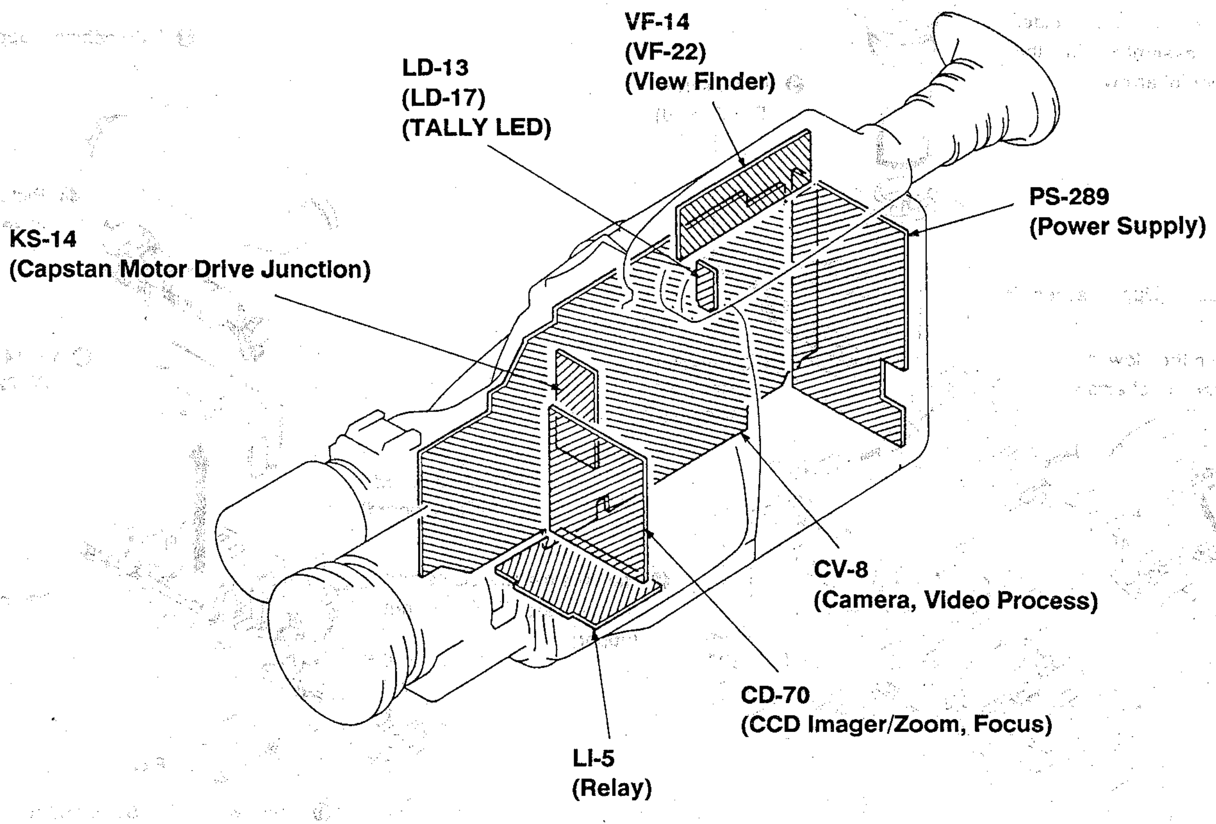
2-4. REMOVAL OF CABINET (UPPER) ASSEMBLY AND EVF


❹ Remove the finder holder block assembly in the direction of arrow.
❺ Three screws (PTP2 × 6)
❼ EVF cabinet (Upper)
❽ Picture tube assembly
❷ Cabinet (Upper) assembly
❶ Remove the claw in the direction of arrow.
❸ Connector CN901 4P CV-8 board
❾ VF-14 board (VF-22 board)
❿ LD-13 board (LD-17 board)
❻ Remove the two claws and remove the EVF cabinet (upper).
❻ Claw
EVF cabinet (Lower)
⓫ Claw
⓫ Remove the RM-53 board from the claw of the EVF cabinet (Lower)

SECTION 3
DIAGRAMS

3-1. CIRCUIT BOARDS LOCATION

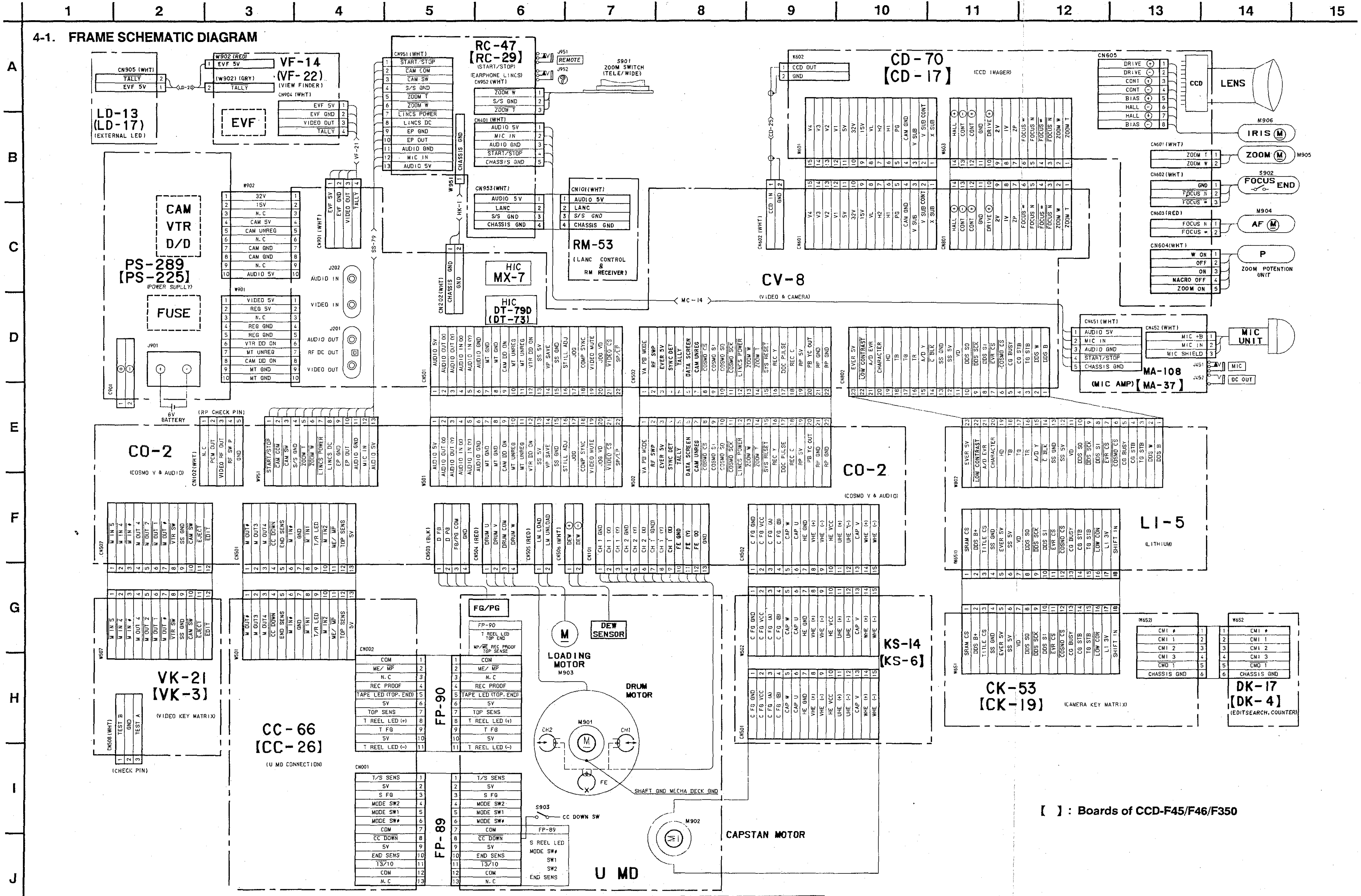

VK-21
(Video Function Switch)
RC-47
(Start/Stop Switch)
RM-53
(Lanc Control & Rm Receiver)
CO-2
(Head Amp, Audio/Servo, System Control)
DK-17
(Edit Search Switch)
CC-66
(T FG/S FG Amp)
CK-53
(Camera Function Switch)
MA-108
(Mic Amp)


VF-14
(VF-22)
(View Finder)
LD-13
(LD-17)
(TALLY LED)
PS-289
(Power Supply)
KS-14
(Capstan Motor Drive Junction)
CV-8
(Camera, Video Process)
CD-70
(CCD Imager/Zoom, Focus)
LI-5
(Relay)

SECTION 4

PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

4-1. FRAME SCHEMATIC DIAGRAM


1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
A B C D E F G H I J
LD-13
(LD-17)
(EXTERNAL LED)
VF-14
(VF-22)
(VIEW FINDER)
EVF
RC-47
[RC-29]
(START/STOP)
(EARPHONE LINCS)
REMOTE
S901
ZOOM SWITCH
(TELE/WIDE)
RM-53
(LANC CONTROL & RM RECEIVER)
HIC
MX-7
HIC
DT-79D
(DT-73)
CAM
VTR
D/D
PS-289
[PS-225]
(POWER SUPPLY)
FUSE
6V
BATTERY
AUDIO IN
VIDEO IN
AUDIO OUT
RF DC OUT
VIDEO OUT
CD-70
[CD-17]
(CCD IMAGER)
CCD
LENS
IRIS
ZOOM
FOCUS END
AF
P
ZOOM POTENTION UNIT
CV-8
(VIDEO & CAMERA)
MIC-14
MIC UNIT
MA-108
(MIC AMP) [MA-37]
MIC
DC OUT
CO-2
(COSMO V & AUDIO)
(RP CHECK PIN)
L I-5
(LITHIUM)
VK-21
[VK-3]
(VIDEO KEY MATRIX)
(CHECK PIN)
CC-66
[CC-26]
(U MD CONNECTION)
FG/PG
FP-90
FP-89
LOADING MOTOR
M903
DEW SENSOR
DRUM MOTOR
M901
SHAFT GND MECHA DECK GND
S903
CC DOWN SW
CAPSTAN MOTOR
M902
U MD
KS-14
[KS-6]
CK-53
[CK-19]
(CAMERA KEY MATRIX)
DK-17
[DK-4]
(EDITSEARCH, COUNTER)

【 】: Boards of CCD-F45/F46/F350

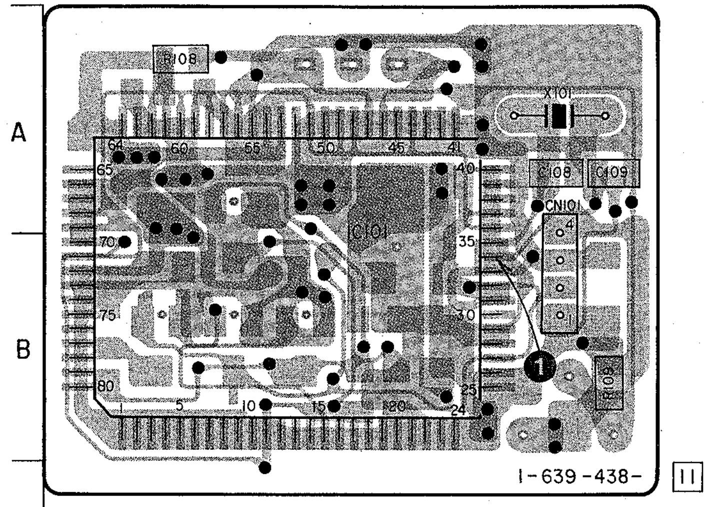
FRAME FRAME

4-2. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

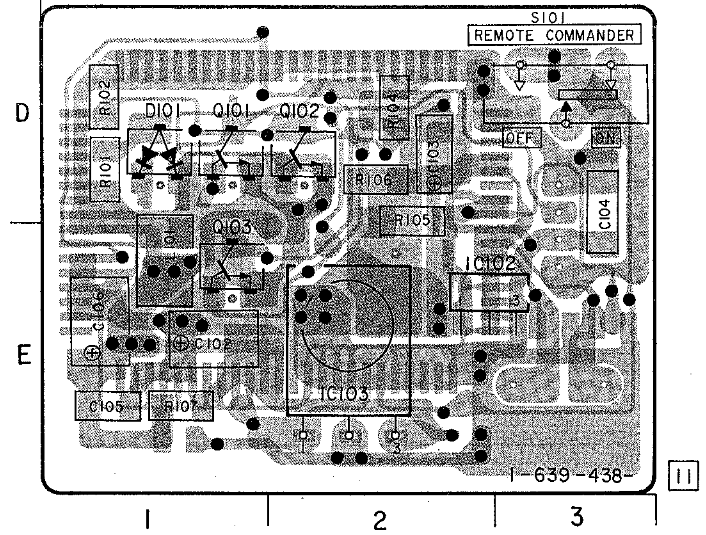
RM-53 (LANC CONTROL & RM RECEIVER), RC-47 (START/STOP SWITCH) PRINTED WIRING BOARDS

— Ref. No. RM-53 BOARD: 11000 series, RC-47 BOARD: 10000 series —

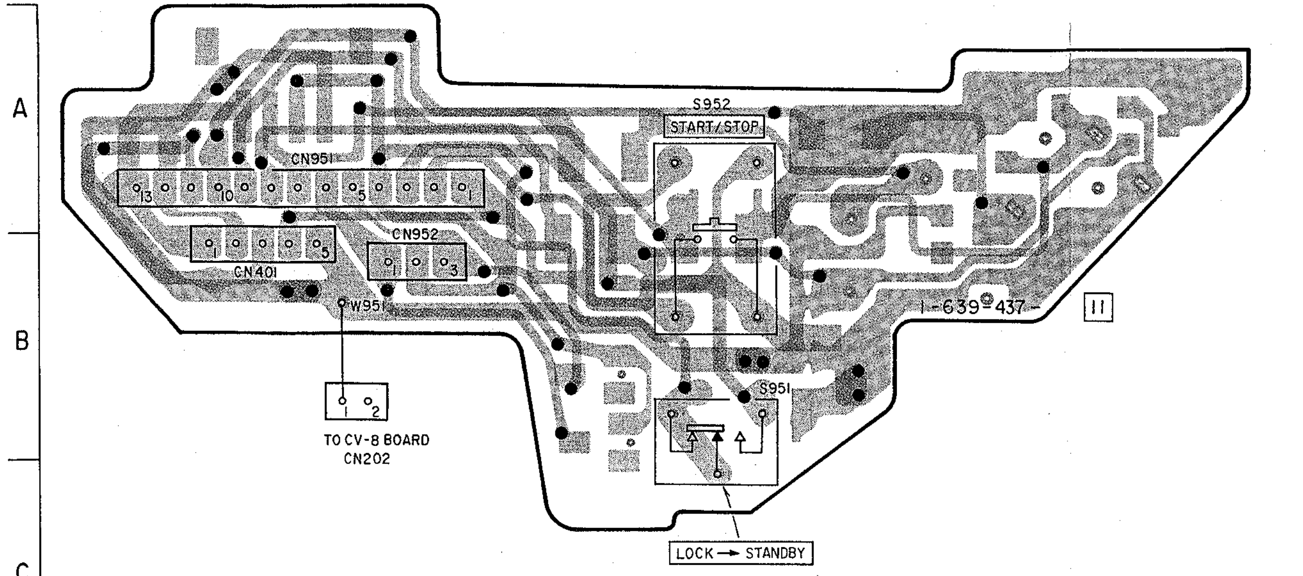
RM-53 BOARD (COMPONENT SIDE)


A
B
R108
X101
C101
C108
C109
CN101
R103
1-639-438-
11

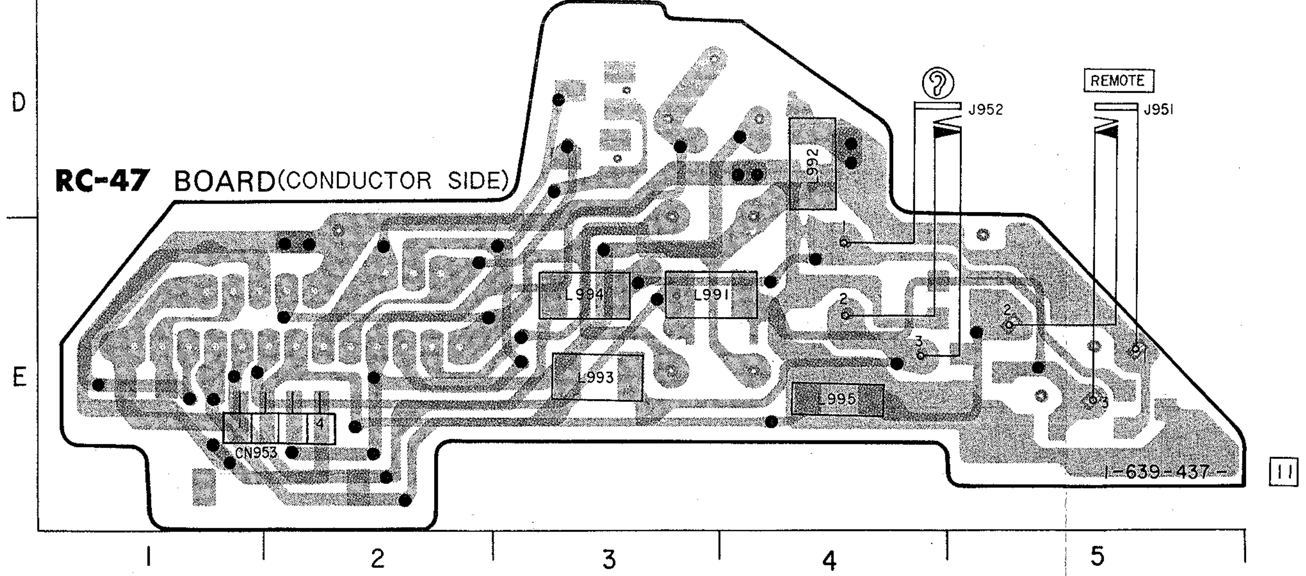
RM-53 BOARD (CONDUCTOR SIDE)


C
D
E
S101
REMOTE COMMANDER
OFF
ON
R102
D101
Q101
Q102
R104
R101
C103
R106
R105
C104
Q103
IC102
C101
C102
IC103
C105
R107
1-639-438-
11
1
2
3

RC-47 BOARD (COMPONENT SIDE)


A
B
C
S952
START/STOP
CN951
CN952
CN401
W951
1-639-437-
11
S951
TO CV-8 BOARD CN202
LOCK → STANDBY

RC-47 BOARD (CONDUCTOR SIDE)


D
E
J952
REMOTE
J951
L992
L994
L991
L993
L995
CN953
1-639-437-
11
1
2
3
4
5

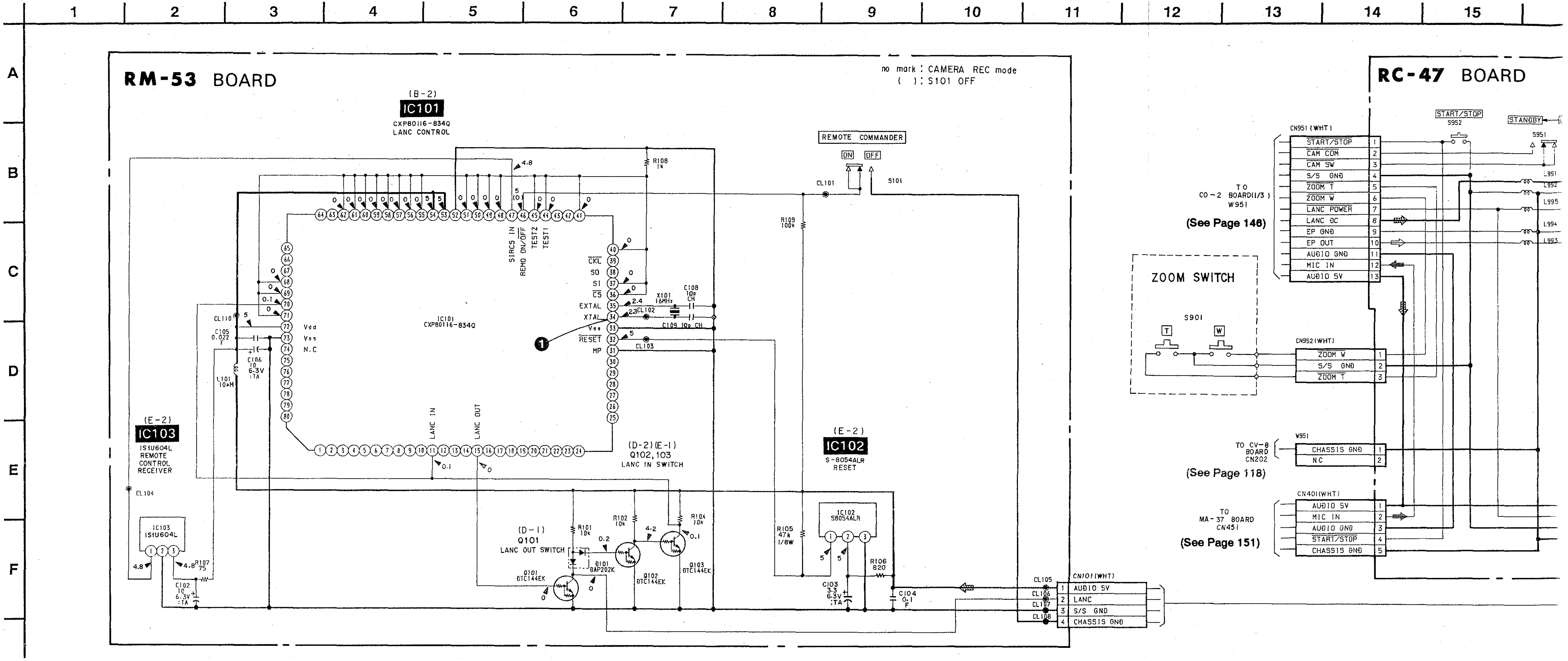
* A-7062-819-A RM-53 BOARD, COMPLETE
****
(Ref. No 11, 000 Series)

		< DIODE >
D101	8-719-914-44	DIODE DAP202K
		< IC >
IC101	8-752-819-57	IC CXP80116-834Q
IC102	8-759-946-03	IC S-8054ALR-LN-S
IC103	8-749-922-63	IC SENSOR, REMOCON IS1U60
		< TRANSISTOR >
Q101	8-729-901-01	TRANSISTOR DTC144EK
Q102	8-729-901-01	TRANSISTOR DTC144EK
Q103	8-729-901-01	TRANSISTOR DTC144EK

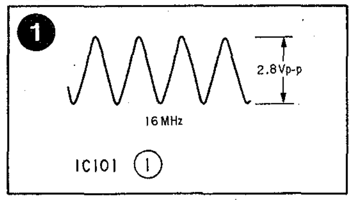
RM-53 (LANC CONTROL & RM RECEIVER), RC-47 (START/STOP SWITCH) SCHEMATIC DIAGRAMS

— Ref. No. RM-53 BOARD: 11000 series, RC-47 BOARD: 10000 series —

- The pages above correspond to SERVICE MANUAL (Original)


1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
A B C D E F
RM-53 BOARD
(B-2)
IC101
CXP80116-834Q
LANC CONTROL
no mark : CAMERA REC mode
( ) : S101 OFF
REMOTE COMMANDER
ON OFF
S101
CL101
R108 1k
R109 100k
SIRCS IN
REMO ON/OFF
TEST2
TEST1
CKL
SO
SI
CS
EXTAL
XTAL
Vss
RESET
MP
X101 16MHz
C108 10p CH
C109 10p CH
CL102
CL103
IC101 CXP80116-834Q
Vdd
Vss
N.C
CL110
C105 0.022 F
C106 10 6.3V :TA
L101 10μH
LANC IN
LANC OUT
(E-2)
IC103
IS1U604L
REMOTE CONTROL RECEIVER
CL104
IC103 IS1U604L
R107 75
C102 10 6.3V :TA
(D-2)(E-1)
Q102,103
LANC IN SWITCH
(D-1)
Q101
LANC OUT SWITCH
R101 10k
R102 10k
R104 10k
Q101 DTC144EK
D101 DAP202K
Q102 DTC144EK
Q103 DTC144EK
(E-2)
IC102
S-8054ALR
RESET
IC102 S8054ALR
R105 47k 1/8W
R106 820
C103 3.3 6.3V :TA
C104 0.1 F
CL105
CL106
CL107
CL108
CN101(WHT)
AUDIO 5V
LANC
S/S GND
CHASSIS GND
RC-47 BOARD
START/STOP S952
STANDBY
S951
CN951(WHT)
START/STOP
CAM COM
CAM SW
S/S GND
ZOOM T
ZOOM W
LANC POWER
LANC DC
EP GND
EP OUT
AUDIO GND
MIC IN
AUDIO 5V
TO CO-2 BOARD(1/3) W951
(See Page 146)
L991 L992 L995 L994 L993
ZOOM SWITCH
S901
T W
CN952(WHT)
ZOOM W
S/S GND
ZOOM T
W951
TO CV-8 BOARD CN202
CHASSIS GND
NC
(See Page 118)
CN401(WHT)
TO MA-37 BOARD CN451
AUDIO 5V
MIC IN
AUDIO GND
START/STOP
CHASSIS GND
(See Page 151)

RM-51P BOARD


1
2.8Vp-p
16MHz
IC101 ①

SYSTEM CONTROL MICROCOMPUTER (CXP80116:IC101 on RM-53 Board)

PORT FUNCTIONS DESCRIPTION

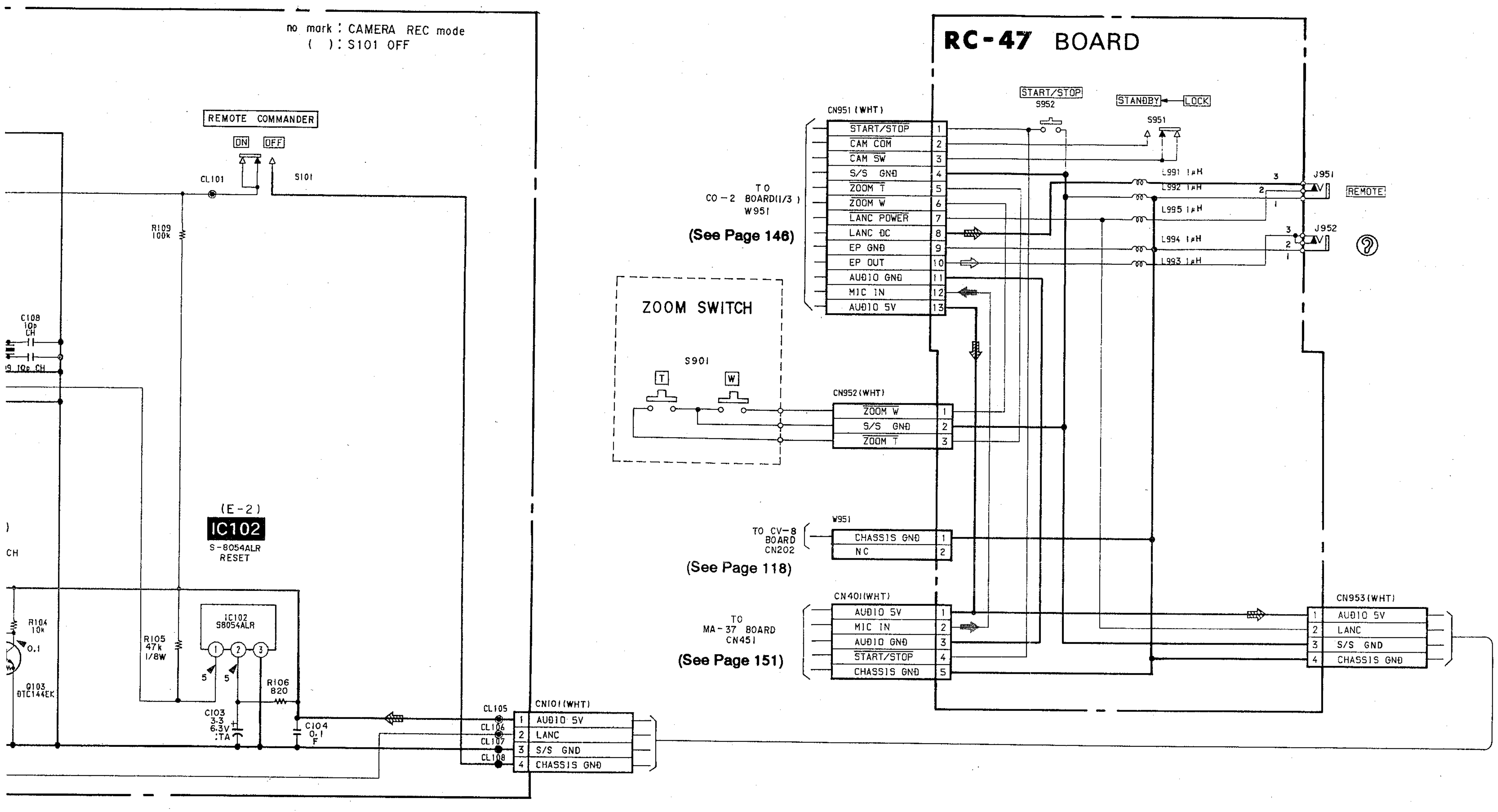
Pin No.	Signal	I/O	Description
11	LANC IN	I	LANC signal input
15	LANC OUT	O	LANC signal output
31	MP	I	Microprocessor mode input terminal. L:Single chip mode
32	$\overline{\text{RESET}}$	I	Reset input. Reset:L
33	VSS	–	GND
34	XTAL	O	System clock. 16MHz crystal oscillator connecting terminal.
35	EXTAL	I	
46	REMO ON/$\overline{\text{OFF}}$	I	Remote control ON/OFF select signal. OFF:L
47	SIRCS IN	I	SIRCS signal input
52	AVSS	–	Power supply input for A/D converter
53	AVREF	–	Reference voltage input for A/D converter
54	AVSS	–	GND terminal for A/D converter
70	LANC IN	I	LANC signal input
72	VDD	–	Power supply input
73	VSS	–	GND

Note: Ports excepting those aforementioned is not used.

- **SIGNAL PATH**

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC				➡
PB				⇨

- The pages above correspond to SERVICE MANUAL (Original)


no mark : CAMERA REC mode
( ) : S101 OFF
REMOTE COMMANDER
ON
OFF
CL101
S101
R109 100k
C108 10p CH
9 10p CH
(E-2)
IC102
S-8054ALR
RESET
R104 10k
0.1
Q103 DTC144EK
R105 47k 1/8W
IC102 S8054ALR
5
5
R106 820
C103 3.3 6.3V :TA
C104 0.1 F
CL105
CL106
CL107
CL108
CN101(WHT)
1 AUDIO 5V
2 LANC
3 S/S GND
4 CHASSIS GND
RC-47 BOARD
CN951 (WHT)
1 START/STOP
2 CAM COM
3 CAM SW
4 S/S GND
5 ZOOM T
6 ZOOM W
7 LANC POWER
8 LANC DC
9 EP GND
10 EP OUT
11 AUDIO GND
12 MIC IN
13 AUDIO 5V
TO CO-2 BOARD(1/3) W951
(See Page 146)
START/STOP
S952
STANDBY
LOCK
S951
L991 1μH
L992 1μH
L995 1μH
L994 1μH
L993 1μH
J951
J952
REMOTE
⑦
ZOOM SWITCH
S901
T
W
CN952(WHT)
1 ZOOM W
2 S/S GND
3 ZOOM T
W951
TO CV-8 BOARD CN202
(See Page 118)
1 CHASSIS GND
2 NC
CN401(WHT)
TO MA-37 BOARD CN451
(See Page 151)
1 AUDIO 5V
2 MIC IN
3 AUDIO GND
4 START/STOP
5 CHASSIS GND
CN953(WHT)
1 AUDIO 5V
2 LANC
3 S/S GND
4 CHASSIS GND

Board)

Description
input
output
sor mode input terminal. L:Single chip mode
. Reset:L
k. 16MHz crystal oscillator connecting terminal.
rol ON/OFF select signal. OFF:L
l input
y input for A/D converter
oltage input for A/D converter
l for A/D converter
input
y input

d.

- **SIGNAL PATH**

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC				➡
PB				⇨

THIS NOTE IS COMMON FOR PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS.
(In addition to this , the necessary note is printed in each block.)

- **For printed wiring boards.**
- ○— : indicated a lead wire mounted on the component side.
- —— : indicated a lead wire mounted on the conductor side.
- ● : Through hole.
- ▨ : Pattern from the side which enables seeing.
- ▨ : Pattern of the rear side.
- Circled numbers refer to waveforms.

Caution:	
Pattern face side: (Conductor Side)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Component side)	Parts on the parts face side seen from the pattern face are indicated.

- **For schematic diagrams.**
- Caution when replacing chip parts.
  New parts must be attached after removal of chip.
  Be careful not to heat the minuts side of tantalum capacitor, because it is damaged by the heat.
- All resistors are in ohms, 1/4W unless otherwise noted.
  Chip resistor are 1/10W unless otherwise noted.
  kΩ : 1000Ω , MΩ : 1000kΩ .
- All capacitors are in μF unless otherwise noted. pF: μμF.
  50V or less are not indicated except for electrolytics and tantalums.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- ▭ : nonflammable resistor.
- ▭ : fusible resistor.
- ☐ : panel designation.
- ☐ : adjustment for repeair.
- ▬ : B+ Line.
- ⇨ : IN/OUT direction of (+, −) B LINE.
- Circled numbers refer to waveforms.

Note:	Note:
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safty. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une piéce portant le numéro spécifié.

When indicating parts by reference number, please include the board name.

SECTION 5
EXPLODED VIEWS

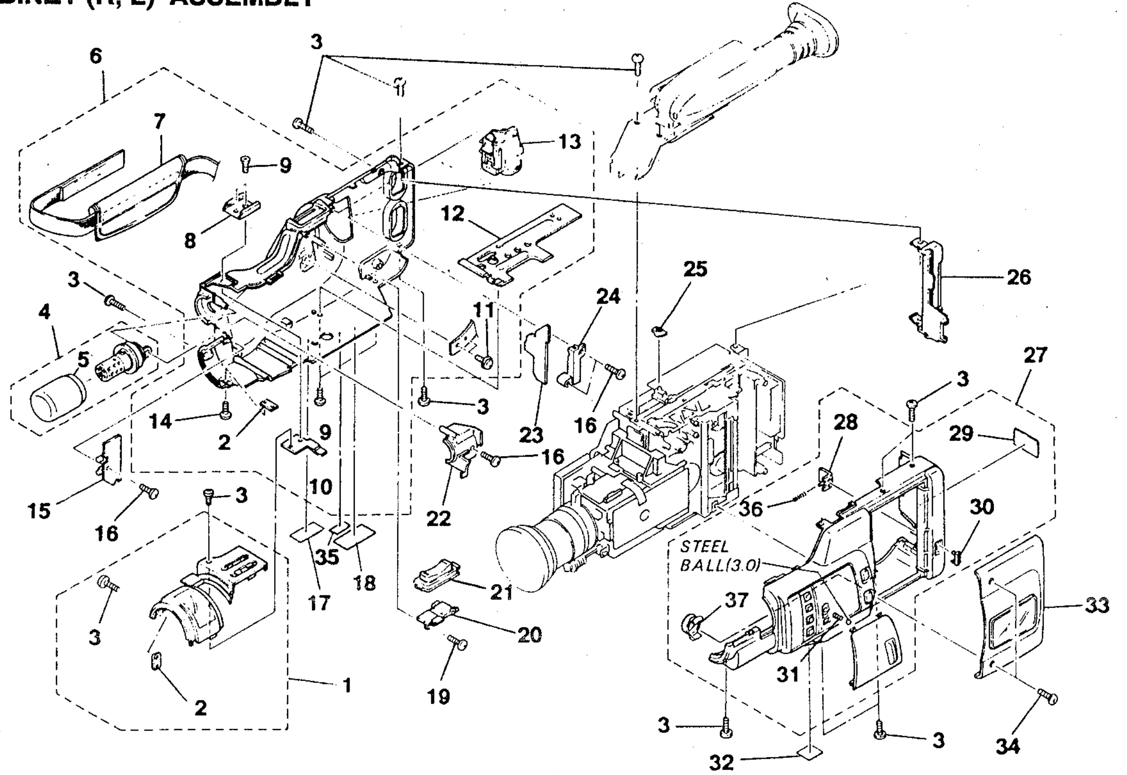
NOTE:
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- Items marked " * " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.

Hardware (# mark) list is given in the last of this parts list.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une piéce portant le numéro spécifié.

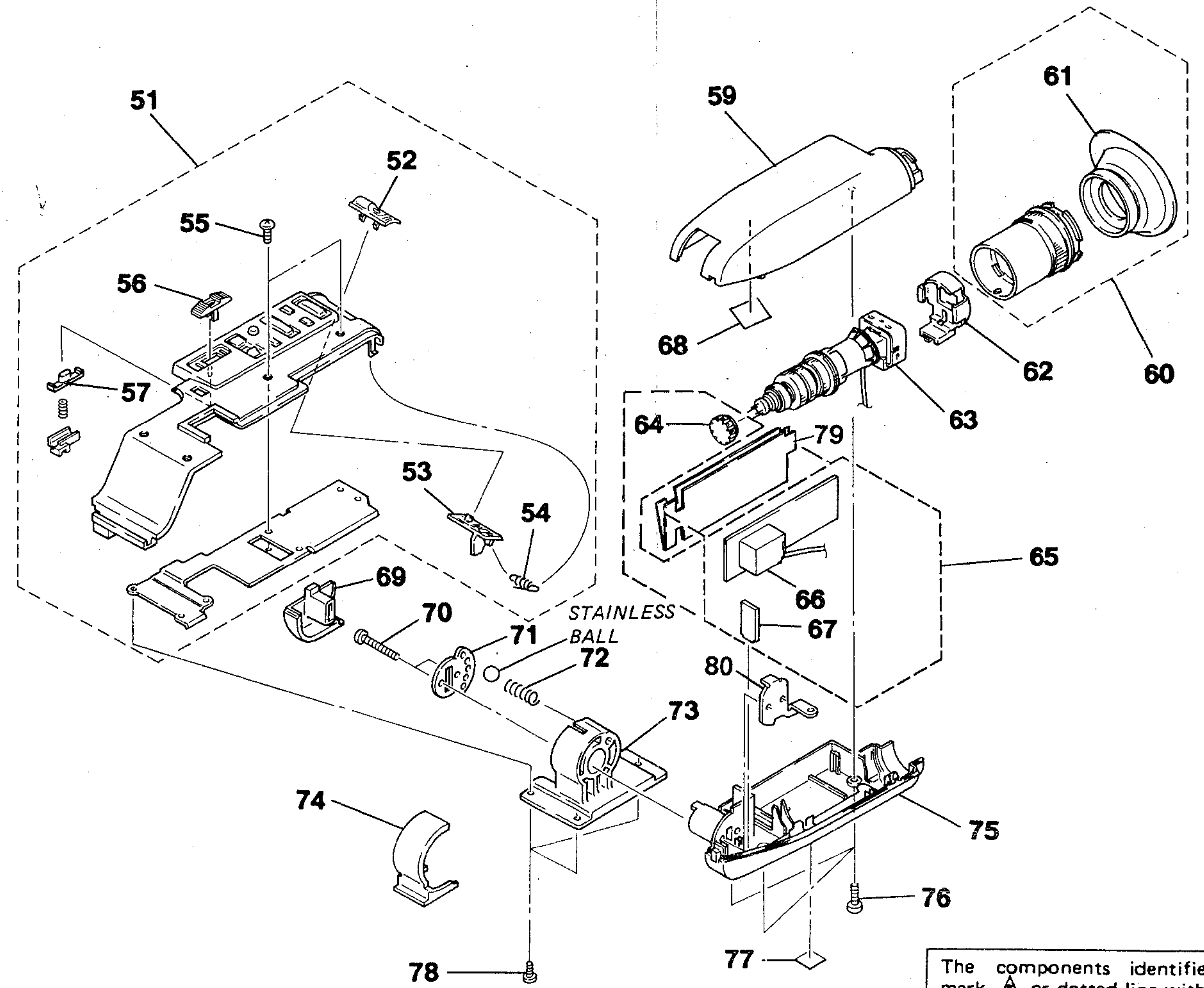
5-1. CABINET (R, L) ASSEMBLY



Ref. No.	Part No.	Description	Remark
1	X-3733-924-1	CABINET (FRONT) ASSY (US/Canadian)	
	X-3940-632-1	CABINET (FRONT) ASSY (E)	
2	3-732-912-01	JOINT, L/R	
3	3-719-381-01	SCREW (M2X4)	
4	1-542-125-21	MICROPHONE (C-2027)	
5	3-707-650-11	SCREEN, WIND	
6	X-3733-923-1	CABINET (LEFT) ASSY (US/Canadian)	
	X-3940-851-1	CABINET (LEFT) ASSY (E)	
7	3-719-323-01	BELT, GRIP	
8	3-724-511-01	SHOE, ACCESSORY	
9	3-719-381-31	SCREW (M2X3)	
10	3-737-723-01	RETAINER, SHOE	
11	3-669-480-21	+ PTPWH 2	
12	* 3-732-911-01	SHEET METAL, TRIPOD	
13	X-3732-953-1	KNOB ASSY, SP (US/Canadian)	
13	X-3940-633-1	KNOB ASSY, SP (E)	
14	3-719-831-21	SCREW (M2X4)	
15	* A-7061-741-A	MA-37 BOARD, COMPLETE	
16	3-713-790-31	SCREW (M2X8), TAPPING, P3	
17	* 3-704-367-01	LABEL (US)	
18	* 3-943-269-01	LABEL, MODEL NUMBER (U) (US/Canadian)	
	3-943-765-01	LABEL, MODEL NUMBER (E)	
19	3-713-790-21	SCREW (M2X6), TAPPING, P3	

Ref. No.	Part No.	Description	Remark
20	* 3-732-937-01	RETAINER, ZOOM BUTTON	
21	1-571-837-11	SWITCH, PUSH (ZOOM)	
22	3-737-737-01	HOUSING, MICROPHONE (US/Canadian)	
	3-737-737-21	HOUSING, MICROPHONE (E)	
23	* A-7071-441-A	RC-47 BOARD, COMPLETE	
24	* 3-732-928-01	STOPPER, RC	
25	3-732-926-01	BUTTON, EDIT	
26	3-732-924-01	BLIND, L/R (US/Canadian)	
	3-732-924-41	BLIND, L/R (E)	
27	X-3940-758-1	CABINET (R) ASSY (US/Canadian)	
27	X-3940-855-1	CABINET (R) ASSY (E)	
28	3-732-906-01	LOCK, BATTERY	
29	* 3-719-683-01	LABEL, BATTERY FITTING	
30	3-732-905-01	BUTTON, BATTERY RELEASE	
31	3-576-098-00	SPRING, COMPRESSION	
32	* 3-704-256-01	LABEL, CAUTION (US)	
33	X-3940-760-1	LID ASSY, CASSETTE (US/Canadian)	
	X-3940-854-1	LID ASSY, CASSETTE (E)	
34	3-733-912-01	SCREW (M2X2.5), SPECIAL HEAD	
35	3-703-845-01	LABEL (N) (U/C), MAIN CAUTION	
36	3-426-508-00	SPRING, COMPRESSION	
37	* 3-737-735-01	CAP, SPRING	
38	* A-7062-819-A	RM-53 BOARD, COMPLETE	

5-2. CABINET (UPPER), EVF ASSEMBLY (TYPE A)



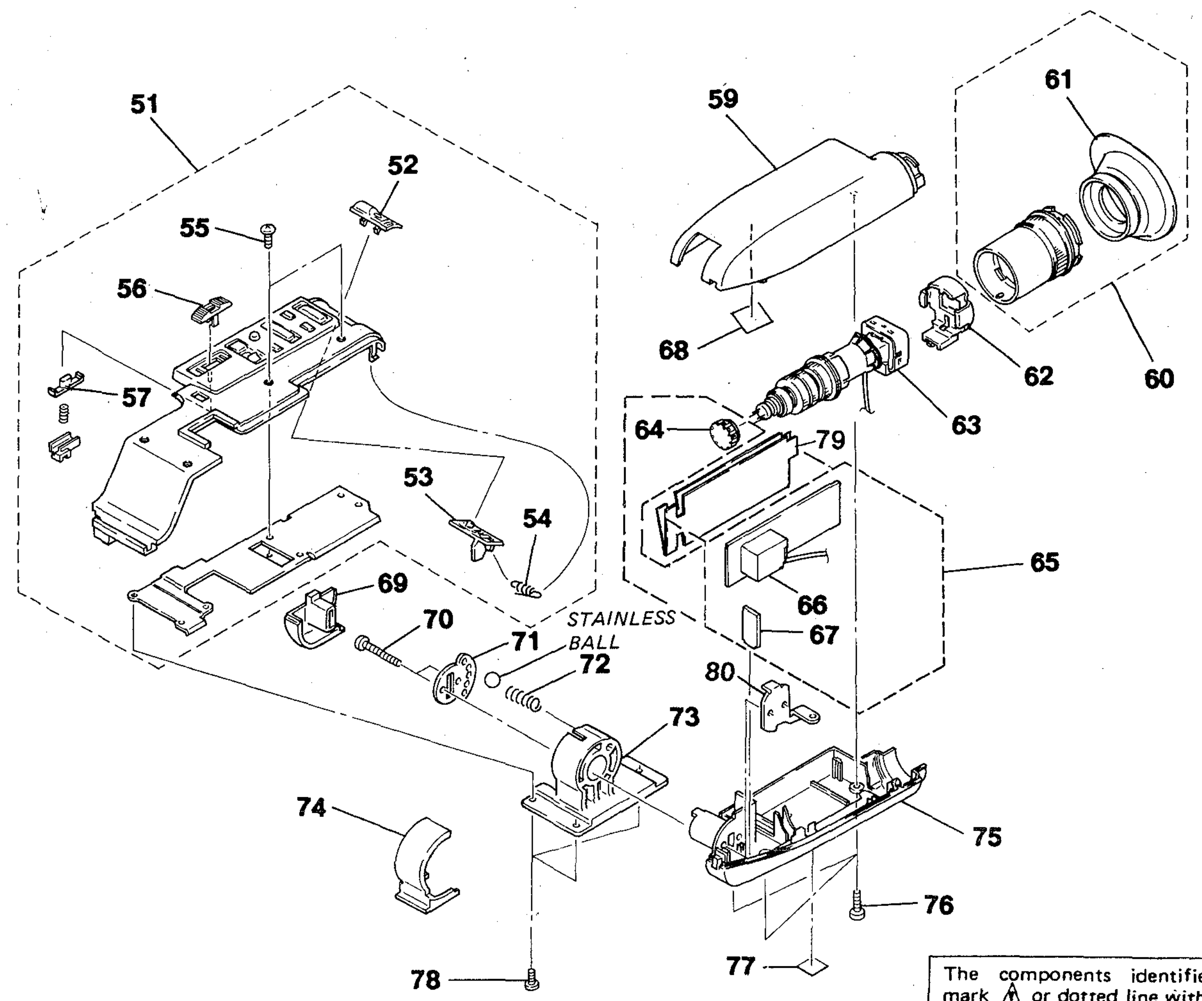
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifé.

Ref. No.	Part No.	Description	Remark
51	* X-3940-759-1	CABINET (UPPER) ASSY (US/Canadian)	
	X-3940-853-1	CABINET (UPPER) ASSY (E)	
52	3-732-919-01	BUTTON, EJECT	
53	3-732-920-01	LOCK, EJECT	
54	3-669-440-00	SPRING, TENSION	
55	3-719-381-01	SCREW (M2X4)	
56	3-718-226-01	BUTTON, POWER	
57	* 3-718-257-11	BUTTON, PUSH, POWER	
59	3-732-948-01	CABINET (UPPER), EVF (US/Canadian)	
	3-732-948-81	CABINET (UPPER), EVF (E)	
60	A-7080-715-A	HOLDER BLOCK ASSY, FINDER (US/Canadian)	
	A-7081-614-A	HOLDER BLOCK ASSY, FINDER (E)	
61	3-733-922-01	EYE CUP	
62	X-3732-910-1	HOLDER ASSY, CRT	
63	⚠ 1-452-482-11	CRT ASSY (M91JYZ60WB)	
64	⚠ 1-540-019-21	SOCKET ASSY, CRT (W901)	
65	* A-7061-560-A	VF-14 BOARD, COMPLETE	
66	⚠ 1-439-431-11	TRANSFORMER ASSY, FLYBACK (T901)	

Ref. No.	Part No.	Description	Remark
67	* 1-629-384-11	LD-13 BOARD	
68	3-704-233-01	LABEL, CAUTION, HIGH VOLTAGE	
69	3-732-949-01	BLIND, EVF CABINET (LOWER) (US/Canadian)	
	3-732-949-41	BLIND, EVF CABINET (LOWER) (E)	
70	3-732-987-01	SCREW (M2X20), +P	
71	3-732-947-01	PLATE, LOCK	
72	3-732-946-01	SPRING, COMPRESSION	
73	* 3-732-944-01	BEARING, EVF	
74	3-732-950-01	BLIND, EVF (US/Canadian)	
	3-732-950-41	BLIND, EVF (E)	
75	X-3732-911-1	CABINET (LOWER) ASSY, EVF (US/Canadian)	
	X-3940-634-1	CABINET (LOWER) ASSY, EVF (E)	
76	3-713-790-31	SCREW (M2X8), TAPPING, P3	
77	3-703-848-01	LABEL (N), SUB CAUTION	
78	3-732-988-01	SCREW (M2X2.5)	
79	* 3-733-914-01	INSULATOR, EVF	
80	* 3-732-979-01	REINFORCEMENT, EVF	

5-2. CABINET (UPPER), EVF ASSEMBLY (TYPE A)



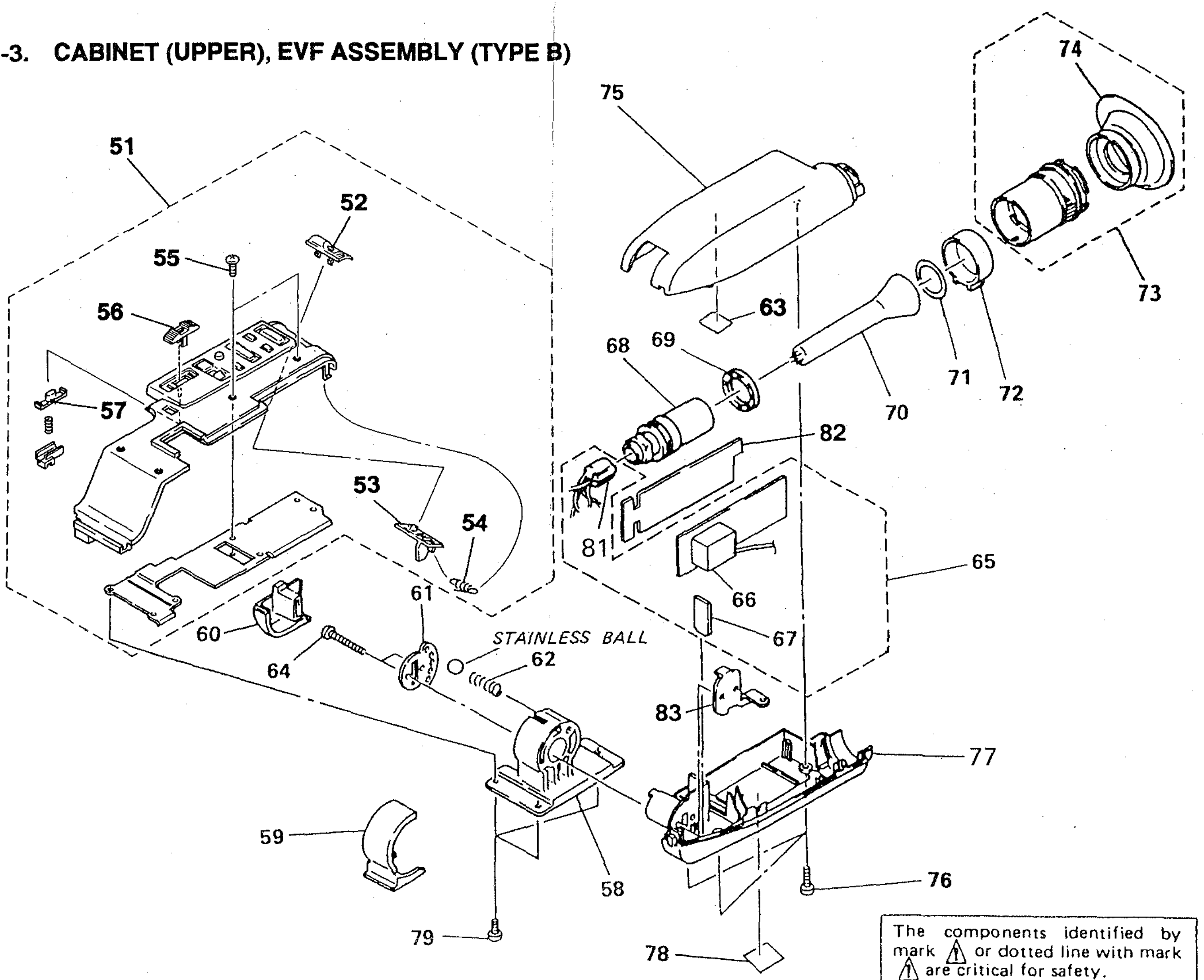
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifé.

Ref. No.	Part No.	Description	Remark
51	* X-3940-759-1	CABINET (UPPER) ASSY (US/Canadian)	
	X-3940-853-1	CABINET (UPPER) ASSY (E)	
52	3-732-919-01	BUTTON, EJECT	
53	3-732-920-01	LOCK, EJECT	
54	3-669-440-00	SPRING, TENSION	
55	3-719-381-01	SCREW (M2X4)	
56	3-718-226-01	BUTTON, POWER	
57	* 3-718-257-11	BUTTON, PUSH, POWER	
59	3-732-948-01	CABINET (UPPER), EVF (US/Canadian)	
	3-732-948-81	CABINET (UPPER), EVF (E)	
60	A-7080-715-A	HOLDER BLOCK ASSY, FINDER (US/Canadian)	
	A-7081-614-A	HOLDER BLOCK ASSY, FINDER (E)	
61	3-733-922-01	EYE CUP	
62	X-3732-910-1	HOLDER ASSY, CRT	
63	⚠ 1-452-482-11	CRT ASSY (M91JYZ60WB)	
64	⚠ 1-540-019-21	SOCKET ASSY, CRT (W901)	
65	* A-7061-560-A	VF-14 BOARD, COMPLETE	
66	⚠ 1-439-431-11	TRANSFORMER ASSY, FLYBACK (T901)	

Ref. No.	Part No.	Description	Remark
67	* 1-629-384-11	LD-13 BOARD	
68	3-704-233-01	LABEL, CAUTION, HIGH VOLTAGE	
69	3-732-949-01	BLIND, EVF CABINET (LOWER) (US/Canadian)	
	3-732-949-41	BLIND, EVF CABINET (LOWER) (E)	
70	3-732-987-01	SCREW (M2X20), +P	
71	3-732-947-01	PLATE, LOCK	
72	3-732-946-01	SPRING, COMPRESSION	
73	* 3-732-944-01	BEARING, EVF	
74	3-732-950-01	BLIND, EVF (US/Canadian)	
	3-732-950-41	BLIND, EVF (E)	
75	X-3732-911-1	CABINET (LOWER) ASSY, EVF (US/Canadian)	
	X-3940-634-1	CABINET (LOWER) ASSY, EVF (E)	
76	3-713-790-31	SCREW (M2X8), TAPPING, P3	
77	3-703-848-01	LABEL (N), SUB CAUTION	
78	3-732-988-01	SCREW (M2X2.5)	
79	* 3-733-914-01	INSULATOR, EVF	
80	* 3-732-979-01	REINFORCEMENT, EVF	

5-3. CABINET (UPPER), EVF ASSEMBLY (TYPE B)



The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

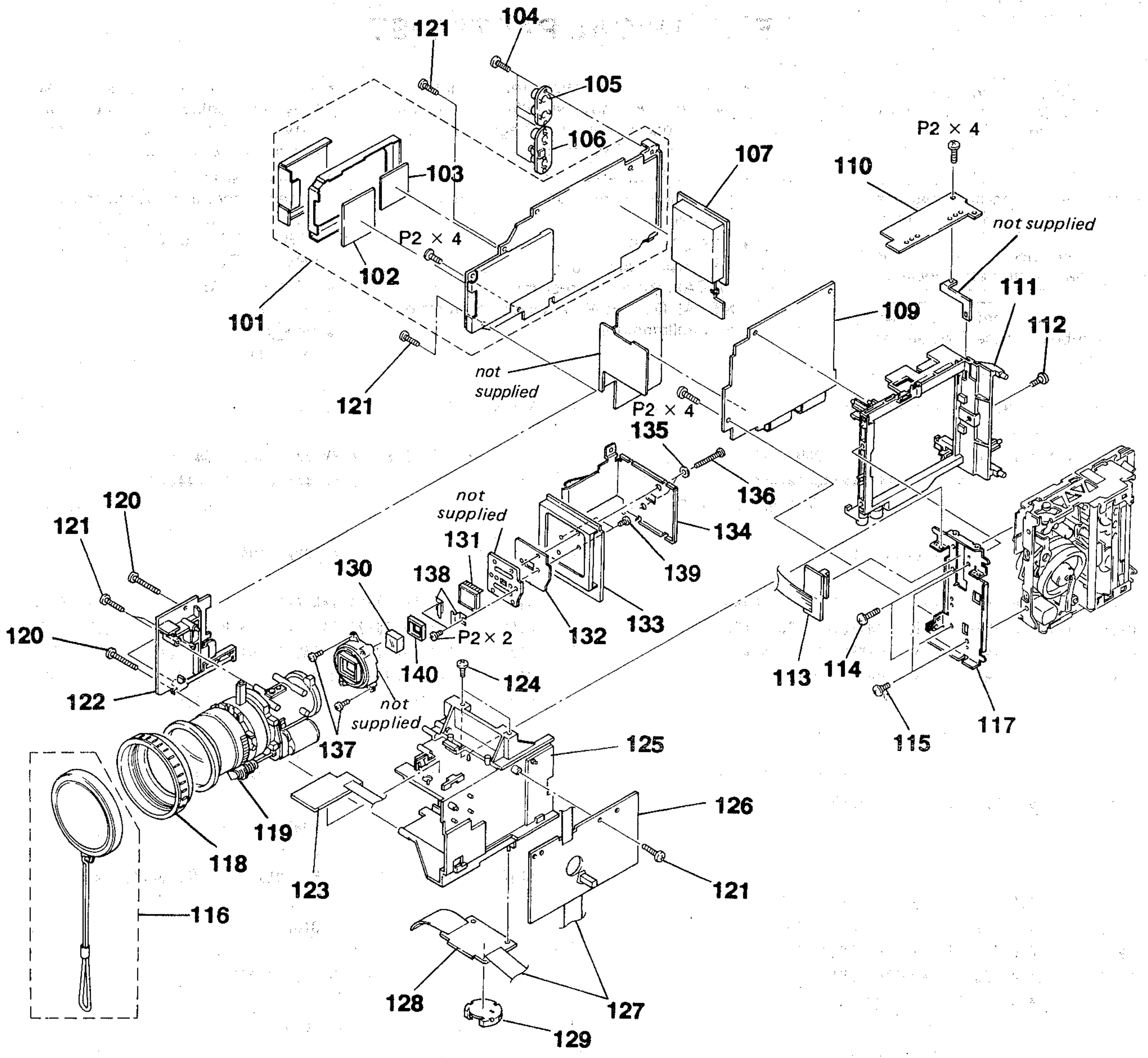
Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No.	Part No.	Description	Remark
51	* X-3940-759-1	CABINET (UPPER) ASSY (US/Canadian)	
	X-3940-853-1	CABINET (UPPER) ASSY (E)	
52	3-732-919-01	BUTTON, EJECT	
53	3-732-920-01	LOCK, EJECT	
54	3-669-440-00	SPRING, TENSION	
55	3-719-381-01	SCREW (M2X4)	
56	3-718-226-01	BUTTON, POWER	
57	* 3-718-257-11	BUTTON, PUSH, POWER	
58	* 3-732-944-01	BEARING, EVF	
59	3-732-950-01	BLIND, EVF (US/Canadian)	
59	3-732-950-41	BLIND, EVF (E)	
60	3-732-949-01	BLIND, EVF CABINET (LOWER) (US/Canadian)	
	3-732-949-41	BLIND, EVF CABINET (LOWER) (E)	
61	3-732-947-01	PLATE, LOCK	
62	3-732-946-01	SPRING, COMPRESSION	
63	3-704-233-01	LABEL, CAUTION, HIGH VOLTAGE	
64	3-732-987-01	SCREW (M2X20), +P	
65	* A-7061-558-A	VF-22 BOARD, COMPLETE	
66	⚠ 1-439-428-11	TRANSFORMER ASSY, FLYBACK (T901)	
67	* 1-630-067-11	LD-17 BOARD	

Ref. No.	Part No.	Description	Remark
68	⚠ 1-451-310-21	DEFLECTION YOKE (B/W)	
69	3-724-549-01	LOCK, CRT	
70	1-546-085-11	CATHODE-RAY TUBE, B/W (M01KGG007WB)	
71	3-724-570-01	RING, CRT FIXED	
72	X-3724-509-1	HOLDER ASSY, CRT	
73	A-7080-715-A	HOLDER BLOCK ASSY, FINDER (US/Canadian)	
	A-7081-614-A	HOLDER BLOCK ASSY, FINDER (E)	
74	3-733-922-01	EYE CUP	
75	3-732-948-81	CABINET (UPPER), EVF (E)	
	3-732-948-01	CABINET (UPPER), EVF (US/Canadian)	
76	3-713-790-31	SCREW (M2X8), TAPPING, P3	
77	X-3732-911-1	CABINET (LOWER) ASSY, EVF (US/Canadian)	
	X-3940-634-1	CABINET (LOWER) ASSY, EVF (E)	
78	3-703-848-01	LABEL (N), SUB CAUTION	
79	3-732-988-01	SCREW (M2X2.5)	
81	⚠ 1-526-978-21	SOCKET ASSY, CRT (CRT901)	
82	* 3-733-914-01	INSULATOR, EVF	
83	* 3-732-979-01	REINFORCEMENT, EVF	

5-4. MAIN BOARD ASSEMBLY

Be sure to read "Precautions for Replacement of CCD Imager" on page 87 when changing the CCD imager.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104
105
106
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P2 × 4
102
101
121
107
110
P2 × 4
not supplied
111
112
109
not supplied
P2 × 4
135
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120
121
not supplied
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138
133
132
120
140
P2× 2
124
113
114
122
not supplied
137
115
117
125
126
119
118
123
121
116
128
127
129

Ref. No.	Part No.	Description	Remark
101	* A-7061-832-A	CV-8 BOARD, COMPLETE	
102	A-7068-161-A	HIC, DT-79D BOARD, COMPLETE	
103	A-7068-128-A	MX-7 HIC BOARD, COMPLETE	
104	3-719-695-01	SCREW (M1.7X3.5), SPECIAL HEAD	
105	1-568-409-11	JACK, PIN 2P (AUDIO/VIDEO IN)	
106	1-537-142-11	TERMINAL BOARD (AUDIO/VIDEO/RFU DC OUT)	
107	* A-7061-745-A	PS-225 BOARD, COMPLETE	
109	* A-7061-380-A	CO-2 BOARD, COMPLETE	
110	* 1-631-828-11	VK-3 BOARD	
111	* 3-732-932-01	HOLDER, MD	
112	3-732-791-31	SCREW (M2X3)	
113	* 1-631-827-11	KS-6 BOARD	
114	3-713-790-11	SCREW (M2X5), TAPPING, P3	
115	3-732-816-01	SCREW, STEP	
116	A-7090-806-A	CAP ASSY, HOOD	
117	3-732-936-02	PLATE, FRAME, MD	
118	3-728-269-01	HOOD	
119	1-547-380-11	LENS, ZOOM (VCL-8508XB)	
120	3-713-790-31	SCREW (M2X8), TAPPING, P3	
121	3-713-790-21	SCREW (M2X6), TAPPING, P3	
122	3-737-744-01	HOLDER (B), LENS	
123	* 1-631-825-11	DK-4 BOARD	
124	3-719-408-01	SCREW (B2), TAPPING, P3	
125	X-3733-928-1	HOLDER ASSY, LENS	
126	* A-7062-815-A	CK-53 BOARD, COMPLETE	
127	1-575-064-11	CABLE, FLAT (1.0MM PITCH) 18P	
128	* 1-629-372-11	LI-5 BOARD	
129	1-550-104-32	HOLDER, BATTERY	
130	A-7090-879-A	FILTER KIT, OPTICAL (OFB-02-02)	
131	8-752-604-98	IC ICX026CK-1 (CCD IMAGER)	
132	* 3-725-180-01	SHEET, INSULATING, CCD HOLDER	
133	* A-7061-738-A	CD-17 BOARD, COMPLETE	
134	* X-3733-929-1	SHIELD (CD) ASSY, CAMERA	
135	3-303-961-11	WASHER, POLY	
136	3-335-640-51	SCREW (M2X16)	
137	3-738-519-11	SCREW (M2X3), +B	
138	* 3-725-175-01	STOPPER, CCD	
139	3-713-786-51	SCREW (M2X3)	
140	* 3-725-177-01	RUBBER, SEAL	

RC-47 **RM-53**

SECTION 6
ELECTRICAL PARTS LIST

NOTE:

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une piéce portant le numéro spécifié.

When indicating parts by reference number, please include the board name.

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
  All resistors are in ohms
  METAL: Metal-film resistor
  METAL OXIDE: Metal Oxide-film resistor
  F : nonflammable
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS
  In each case, u: μ, for example:
  uA...: μA..., uPA...: μPA...,
  uPB...: μPB..., uPC...: μPC...,
  uPD...: μPD...
- CAPACITORS
  uF : μF
- COILS
  uH : μH

Ref. No.	Part No.	Description	Remark
	* A-7071-441-A	RC-47 BOARD, COMPLETE ******************** (Ref.No 10,000 Series)	
		< CONNECTOR >	
CN401	1-566-760-11	PIN, CONNECTOR (PC BOARD) 5P	
CN951	* 1-568-521-11	PIN, CONNECTOR (PC BOARD) 13P	
CN952	* 1-566-182-11	PIN, CONNECTOR (PC BOARD) 3P	
CN953	1-580-057-11	PIN, CONNECTOR 4P	
		< JACK >	
J951	1-565-276-21	JACK, ULTRA SMALL 1P (REMOTE)	
J952	1-507-921-00	JACK (EARDPHONE)	
		< COIL >	
L991	1-410-369-11	INDUCTOR CHIP 1uH	
L992	1-410-369-11	INDUCTOR CHIP 1uH	
L993	1-410-369-11	INDUCTOR CHIP 1uH	
L994	1-410-369-11	INDUCTOR CHIP 1uH	
L995	1-410-192-51	INDUCTOR CHIP 1uH	
		< SWITCH >	
S951	1-553-977-00	SWITCH, SLIDE (STANDBY/LOCK)	
S952	1-571-838-11	SWITCH, TACTIL (START/STOP)	

****

Ref. No.	Part No.	Description	Remark
	* A-7062-819-A	RM-53 BOARD, COMPLETE ******************** (Ref.No 11,000 Series)	
		< CAPACITOR >	
C102	1-135-157-21	TANTALUM CHIP 10uF 20% 6.3V	
C103	1-135-180-21	TANTALUM CHIP 3.3uF 20% 6.3V	
C104	1-163-077-00	CERAMIC CHIP 0.1uF 10% 25V	
C105	1-163-033-00	CERAMIC CHIP 0.022uF 50V	
C106	1-135-157-21	TANTALUM CHIP 10uF 20% 6.3V	
C108	1-163-227-11	CERAMIC CHIP 10PF 5% 50V	
C109	1-163-227-11	CERAMIC CHIP 10PF 5% 50V	
		< CONNECTOR >	
CN101	* 1-565-876-11	PIN, CONNECTOR (PC BOARD) 4P	
		< DIODE >	
D101	8-719-914-44	DIODE DAP202K	
		< IC >	
IC101	8-752-819-57	IC CXP80116-834Q	
IC102	8-759-946-03	IC S-8054ALR-LN-S	
IC103	8-749-922-63	IC SENSOR, REMOCON IS1U60	
		< COIL >	
L101	1-412-029-11	INDUCTOR, CHIP 10uH	
		< TRANSISTOR >	
Q101	8-729-901-01	TRANSISTOR DTC144EK	
Q102	8-729-901-01	TRANSISTOR DTC144EK	
Q103	8-729-901-01	TRANSISTOR DTC144EK	

Ref. No.	Part No.	Description	Remark
		< RESISTOR >	
R101	1-216-073-00	METAL CHIP 10K 5%	1/10W
R102	1-216-073-00	METAL CHIP 10K 5%	1/10W
R104	1-216-073-00	METAL CHIP 10K 5%	1/10W
R105	1-216-238-00	METAL GLAZE 47K 5%	1/8W
R106	1-216-047-00	METAL CHIP 820 5%	1/10W
R107	1-216-022-00	METAL CHIP 75 5%	1/10W
R108	1-216-049-00	METAL CHIP 1K 5%	1/10W
R109	1-216-097-00	METAL CHIP 100K 5%	1/10W
		< SWITCH >	
S101	1-553-977-00	SWITCH, SLIDE (REMOTE COMMANDER ON/OFF)	
		< CRYSTAL >	
X101	1-567-927-11	VIBLATOR, CERAMIC (16MHz)	

****

MISCELLANEOUS

****

4	1-542-125-21	MICROPHONE (C-2027)
21	1-571-837-11	SWITCH, PUSH (ZOOM)
105	1-568-409-11	JACK, PIN 2P (AUDIO/VIDEO IN)
106	1-537-142-11	TERMINAL BOARD (AUDIO/VIDEO/RFU DC OUT)
119, 320	1-547-380-11	LENS, ZOOM (VCL-8508XB)
127	1-575-064-11	CABLE, FLAT (1.0MM PITCH) 18P
129	1-550-104-32	HOLDER, BATTERY
131	8-752-604-98	IC ICX026CK-1 (CCD IMAGER)
A63	⚠ 1-452-482-11	CRT ASSY (M91JYZ60WB)
A64	⚠ 1-540-019-21	SOCKET ASSY, CRT (W901)
A66	⚠ 1-439-431-11	TRANSFORMER ASSY, FLYBACK (T901)
B66	⚠ 1-439-428-11	TRANSFORMER ASSY, FLYBACK (T901)
B68	⚠ 1-451-310-21	DEFLECTION YOKE (B/W)
B70	1-546-085-11	CATHODE-RAY TUBE, B/W (M01KGG007WB)
B81	⚠ 1-526-978-21	SOCKET ASSY, CRT (CRT901)

****

Ref. No.	Part No.	Description	Remark
		ACCESSORY & PACKING MATERIAL ****************************	
	A-6767-816-A	RFU ADAPTOR (RFU-89NA) (E)	
	A-6768-241-A	AC POWER ADAPTOR (AC-V35) (E)	
	A-6768-253-A	RFU ADAPTOR (RFU-90UC) (US/Canadian)	
	1-465-720-11	REMOTE COMMANDER (CAM CODER) (RMT-506)	
	* 1-571-163-31	SWITCH, ANTENNA CHANGE (CABLE) (E)	
	* 3-340-514-01	BAG, PROTECTION	
	* 3-738-517-01	BELT, SHOULDER	
	3-753-398-11	MANUAL, INSTRUCTION(ENGLISH/SPANISH) (E)	
	3-753-398-21	MANUAL, INSTRUCTION (ENGLISH) (US/Canadian)	
	3-753-398-31	MANUAL, INSTRUCTION (FRENCH) (Canadian)	
	3-753-398-41	MANUAL, INSTRUCTION (CHINESE) (E)	
	* 3-764-631-12	INSTRUCTION, DEW CONDENSATION (E)	
	* 3-795-581-21	SAFEGUARD (SONY), IMPORTANT (US)	
	3-942-771-31	INDIVIDUAL CARTON (US/Canadian)	
	3-942-771-51	INDIVIDUAL CARTON (E)	
	* 3-943-105-01	CUSHION, ACC	
	* 3-943-106-01	CUSHION (LOWER)	
	** AC-V35/V35A	AC POWER ADAPTOR (US/Canadian)	
	*** NP-55	RECHARGEBLE BATTERY	

Note

** MARK PARTS IS AVAILABLE FOR REPAIR SERVICE.
*** MARK PARTS IS AVAILABLE AS AN OPTIONAL ACCESSORY.

****

HARDWARE LIST

****

7-621-281-15	SCREW +P 2X2
7-627-553-47	PRECISION SCREW +P 2X4 TYPE 3
7-627-553-48	PRECISION SCREW +P 2X4 TYPE 3
7-671-155-01	STEEL BALL 3.0
7-671-156-01	BALL, STAINLESS

****

CK-53 board is all the same sa CK-19 Except for the following parts.

	CCD-F201/F365/F365PAK CK-53		CCD-F45/F46/F360 CK-19	
Ref. No.	Part No.	Description	Part No.	Description
	A-7062-815-A	CK-53 BOARD, COMPLETE (Ref. No. 4,000 Series)	A-7061-739-A	CK-19 BOARD, COMPLETE (Ref. No. 4,000 Series)
IC651	8-759-154-36	uPD7508BGB-SGX981G	8-759-147-08	uPD7508BGB-512

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

CCD-F365PAK is a model that carring case is added in CCD-F365.
Only following parts differ from CCD-F365

Ref. No.	Part No.	Description	Remark
		ACCESSORY & PACKING MATERIAL ***************************	
	A-6767-816-A	RFU ADAPTOR (RFU-89NA)	
	A-6768-241-A	AC POWER ADAPTOR (AC-V35)	
	1-465-720-11	REMOTE COMMANDER (CAM CODER) (RMT-506)	
	* 1-571-163-31	SWITCH, ANTENNA CHANGE (CABLE)	
	* 3-340-514-01	BAG, PROTECTION	
	* 3-738-517-01	BELT, SHOULDER	
	3-741-583-11	CASE (MAIN), CARRYING	
	3-753-398-11	MANUAL, INSTRUCTION (ENGLISH/SPANISH)	
	3-753-398-41	MANUAL, INSTRUCTION (CHINESE)	
	* 3-764-631-12	INSTRUCTION, DEW CONDENSATION	
	* 3-943-967-01	INDIVIDUAL CARTON	
	* 3-943-968-01	CUSHION (UPPER)	
	* 3-943-969-01	CUSHION (LOWER)	
	*** NP-55	BATTERY PACK	

Note

*** MARK PARTS IS AVAILABLE AS AN OPTIONAL ACCESSORY.

****

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Personal Video Group

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CCD-F201/F365/F365PAK
RMT-506

SONY
SERVICE MANUAL

US Model
Canadian Model
CCD-F201
E Model
CCD-F365/F365PAK

SUPPLEMENT-1

Change of RM board

- Two items for RM-53 board are changed as follows.
  And each change is not overlapped.

1. Changing RM-53 board to RM-59 board
2. Changing IC101 on RM-53 board

Page	Ref. No.	FORMER		NEW	
		Part No.	Description	Part No.	Description
24	IC101	8-752-819-57	IC CXP80116-834Q	8-752-831-41	IC CXP80116-838Q

When servicing RM board, following procedures should be adopted respectively.

1. RM-59 board should not be supplied newly.
   After exchanging RM-59 board for the mounted RM-53 board (A-7062-819-A), replace the IC101 with the NEW TYPE above mentioned in 2.
2. In case of exchanging RM-53 board, replace the IC101 on the mounted RM-53 board which is supplied with the NEW TYPE.

- IC102 on RM-53 board change

Page	Ref. No.	FORMER		NEW	
		Part No.	Description	Part No.	Description
24	IC102	8-759-946-03	IC S-8054ALR-LN-S	8-759-937-56	IC S-8054ALB-LM-S

- Deferences between CK-53 board and CK-19 board (Revision)

Ref. No.	CCD-F201/F365/F365PAK CK-53		CCD-F45/F46/F360 CK-19	
	Part No.	Description	Part No.	Description
	A-7062-815-A	CK-53 BOARD, COMPLETE (Ref. No. 4,000 Series)	A-7061-739-A	CK-19 BOARD, COMPLETE (Ref. No. 4,000 Series)
C653		—	1-163-038-00	CERAMIC CHIP 0.1uF 25V
C660	1-163-037-11	CERAMIC CHIP 0.022MF 10% 25V	1-163-989-11	CERAMIC CHIP 0.033MF 10% 25V
IC651	8-759-154-36	IC uPD7508BGB-524	8-759-147-08	IC uPD7508BGB-512
R676	1-216-109-00	METAL GLAZE 330K 5% 1/10W	1-216-103-00	METAL GLAZE 180K 5% 1/10W
R678	1-218-172-11	METAL GLAZE 680K 1% 1/10W	1-218-167-11	METAL GLAZE 330K 1% 1/10W
R680	1-218-172-11	METAL GLAZE 680K 1% 1/10W	1-218-167-11	METAL GLAZE 330K 1% 1/10W
R681	1-216-739-11	METAL GLAZE 100K 1% 1/10W	1-218-336-11	METAL GLAZE 47K 1% 1/10W

SECTION 4

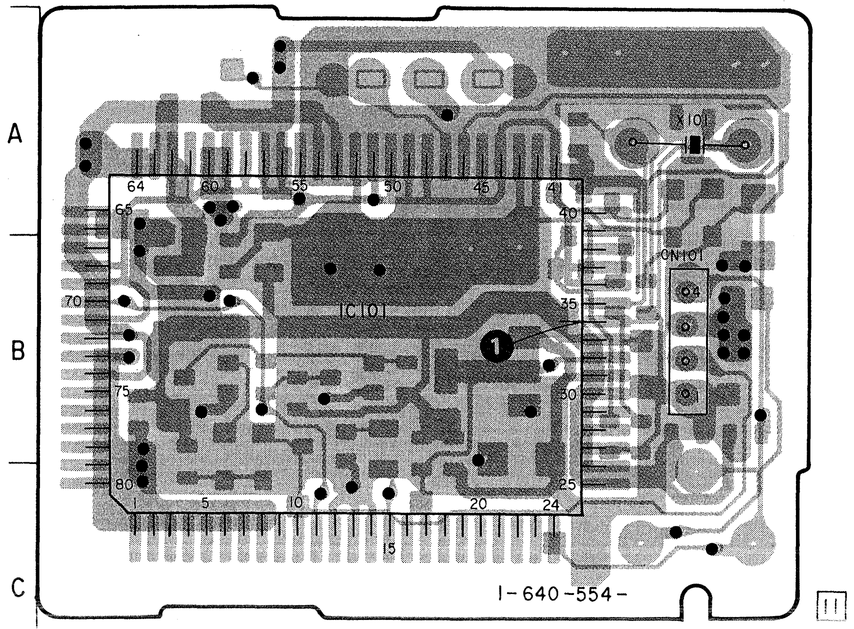
PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

4-2. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

RM-59 (LANC CONTROL, RM RECEIVER, VOLTAGE RISING CURVE ACCELERATOR), RC-47 (START/STOP SWITCH) PRINTED WIRING BOARDS

— Ref. No. RC-47 BOARD: 10,000 series, RM-59 BOARD: 12,000 series —

RM-59 BOARD (COMPONENT SIDE)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X101
CN101
IC101
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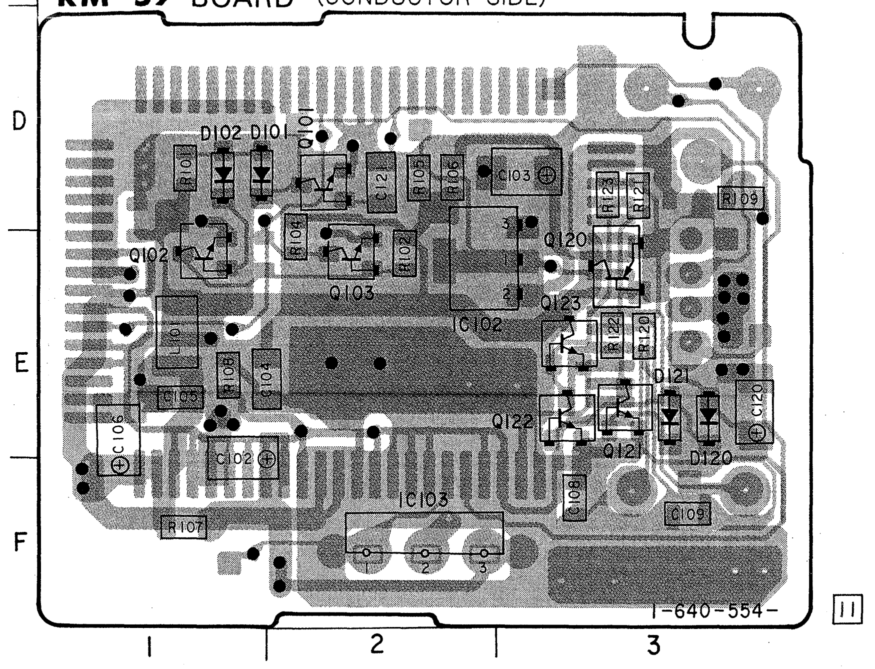
RM-59 BOARD (CONDUCTOR SIDE)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D102
D101
IC101
R101
R105
R106
C121
C103
R123
R121
R109
Q102
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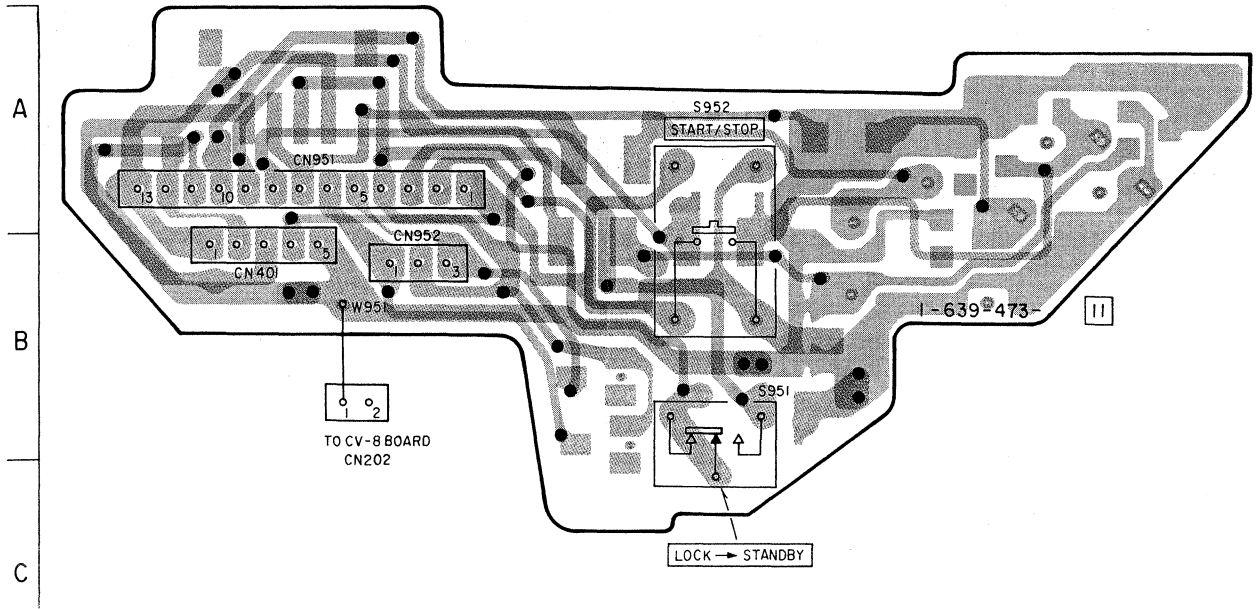
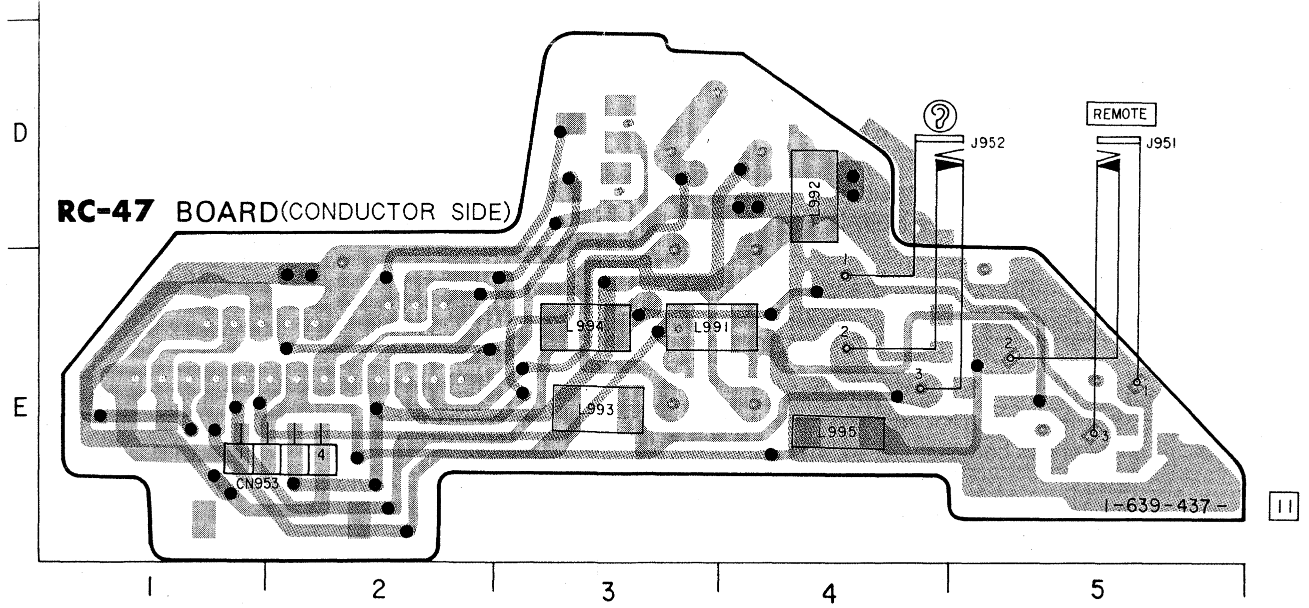
R102
IC102
Q120
Q123
R122
R120
R108
C104
C105
C106
C102
Q122
Q121
D121
D120
C120
C108
C109
IC103
R107
1
2
3
1-640-554-
11

RC-47 BOARD (COMPONENT SIDE)


A
B
C
S952
START/STOP
CN951
13
10
5
1
CN952
CN401
W951
1-639-473-
11
S951
TO CV-8 BOARD
CN202
LOCK → STANDBY

RC-47 BOARD (CONDUCTOR SIDE)


D
E
J952
REMOTE
J951
L992
L994
L991
L993
L995
CN953
1-639-437-
11
1
2
3
4
5

* A-7062-819-A RM-59 BOARD, COMPLETE
****

(Ref. No. 12,000 Series)

(DIODE)

D101	8-719-404-46	DIODE	MA110
D102	8-719-404-46	DIODE	MA110
D120	8-719-404-46	DIODE	MA110
D121	8-719-404-46	DIODE	MA110

(IC)

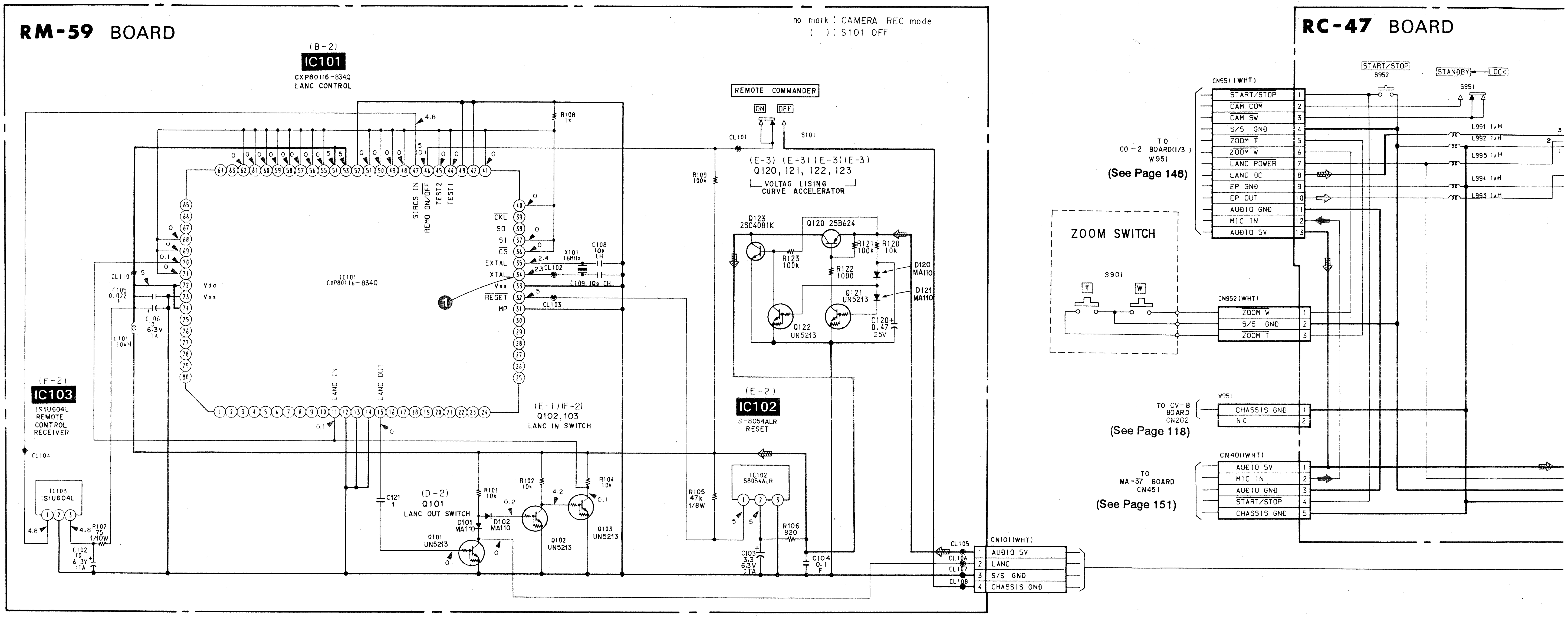
IC101	8-752-831-41	IC	CXP80116-838Q
IC102	8-759-946-03	IC	S-8054ALR
IC103	8-749-922-63	IC	SENSOR, REMOCON IS1U604L

Q101	8-729-402-42	TRANSISTOR	UN5213
Q102	8-729-402-42	TRANSISTOR	UN5213
Q103	8-729-402-42	TRANSISTOR	UN5213
Q120	8-729-141-48	TRANSISTOR	2SB624-BV345
Q121	8-729-402-42	TRANSISTOR	UN5213
Q122	8-729-402-42	TRANSISTOR	UN5213
Q123	8-729-402-32	TRANSISTOR	2SD1819A-R

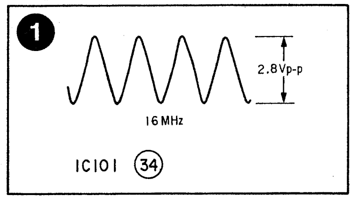
RM-59 (LANC CONTROL, RM RECEIVER, VOLTAGE RISING CURVE ACCELERATOR), RC-47 (START/STOP SWITCH) SCHEMATIC DIAGRAMS

- The pages above correspond to SERVICE MANUAL (Original)

— Ref. No. RC-47 BOARD: 10,000 series, RM-59 BOARD: 12,000 series —

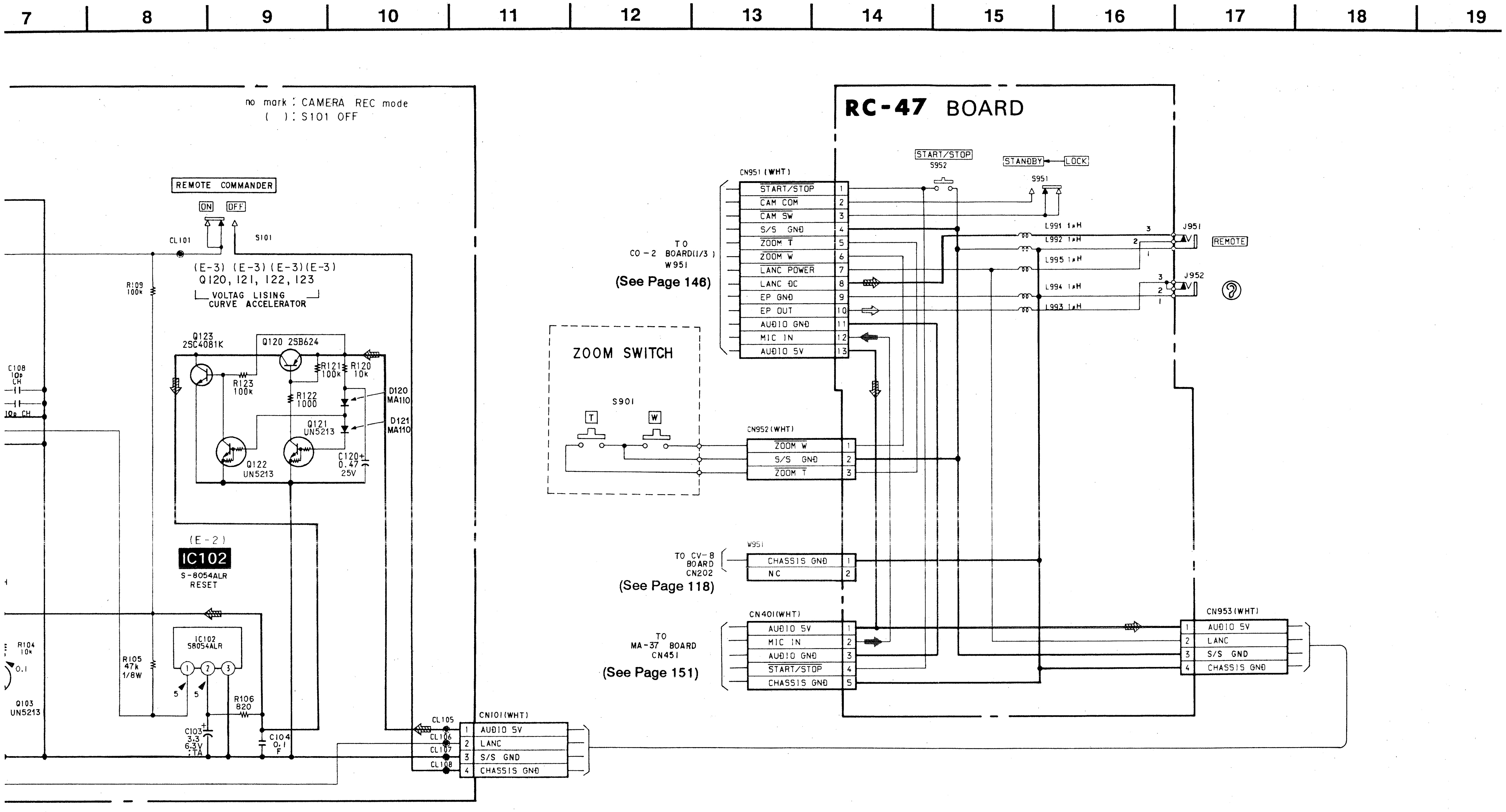

RM-59 BOARD
no mark : CAMERA REC mode
( ) : S101 OFF
(B-2)
IC101
CXP80116-834Q
LANC CONTROL
REMOTE COMMANDER
ON
OFF
CL101
S101
R109 100k
(E-3) (E-3) (E-3) (E-3)
Q120, 121, 122, 123
VOLTAG LISING CURVE ACCELERATOR
Q123 2SC4081K
Q120 2SB624
R121 100k
R120 10k
R123 100k
R122 1000
D120 MA110
D121 MA110
Q121 UN5213
Q122 UN5213
C120 0.47 25V
SIRCS IN
REMO ON/OFF
TEST2
TEST1
CKL
SO
SI
CS
EXTAL
XTAL
Vss
RESET
MP
X101 16MHz
C108 10p CH
C109 10p CH
CL102
CL103
IC101 CXP80116-834Q
Vdd
Vss
CL110
C105 0.022
C106 10 6.3V TA
L101 10μH
R108 1k
LANC IN
LANC OUT
(F-2)
IC103
IS1U604L
REMOTE CONTROL RECEIVER
CL104
IC103 IS1U604L
R107 75 1/10W
C102 10 6.3V TA
(E-1) (E-2)
Q102, 103
LANC IN SWITCH
C121 1
(D-2)
Q101
LANC OUT SWITCH
D101 MA110
D102 MA110
Q101 UN5213
R101 10k
R102 10k
R104 10k
Q102 UN5213
Q103 UN5213
(E-2)
IC102
S-8054ALR
RESET
R105 47k 1/8W
IC102 S8054ALR
R106 820
C103 3.3 6.3V TA
C104 0.1 F
CL105
CL106
CL107
CL108
CN101 (WHT)
AUDIO 5V
LANC
S/S GND
CHASSIS GND
RC-47 BOARD
START/STOP S952
STANDBY
LOCK
S951
CN951 (WHT)
START/STOP
CAM COM
CAM SW
S/S GND
ZOOM T
ZOOM W
LANC POWER
LANC DC
EP GND
EP OUT
AUDIO GND
MIC IN
AUDIO 5V
TO CO-2 BOARD (1/3) W951
(See Page 146)
L991 1μH
L992 1μH
L995 1μH
L994 1μH
L993 1μH
ZOOM SWITCH
S901
T
W
CN952 (WHT)
ZOOM W
S/S GND
ZOOM T
W951
TO CV-8 BOARD CN202
(See Page 118)
CHASSIS GND
NC
CN401 (WHT)
TO MA-37 BOARD CN451
(See Page 151)
AUDIO 5V
MIC IN
AUDIO GND
START/STOP
CHASSIS GND

RM-59 BOARD



- **SIGNAL PATH (ANALOG)**

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC				➡
PB				⇨


7
8
9
10
11
12
13
14
15
16
17
18
19
no mark : CAMERA REC mode
( ) : S101 OFF
REMOTE COMMANDER
ON
OFF
CL101
S101
(E-3) (E-3) (E-3) (E-3)
Q120, 121, 122, 123
VOLTAG LISING
CURVE ACCELERATOR
R109 100k
C108 10p CH
10p CH
Q123 2SC4081K
Q120 2SB624
R123 100k
R121 100k
R120 10k
R122 1000
D120 MA110
D121 MA110
Q121 UN5213
Q122 UN5213
C120 0.47 25V
(E-2)
IC102
S-8054ALR
RESET
IC102 S8054ALR
R104 10k
0.1
Q103 UN5213
R105 47k 1/8W
5
5
R106 820
C103 3.3 6.3V :TA
C104 0.1 F
CL105
CL106
CL107
CL108
CN101 (WHT)
1 AUDIO 5V
2 LANC
3 S/S GND
4 CHASSIS GND
RC-47 BOARD
CN951 (WHT)
START/STOP 1
CAM COM 2
CAM SW 3
S/S GND 4
ZOOM T 5
ZOOM W 6
LANC POWER 7
LANC DC 8
EP GND 9
EP OUT 10
AUDIO GND 11
MIC IN 12
AUDIO 5V 13
TO CO-2 BOARD (1/3) W951
(See Page 146)
START/STOP
S952
STANDBY
LOCK
S951
L991 1μH
L992 1μH
L995 1μH
L994 1μH
L993 1μH
J951
REMOTE
J952
3
2
1
ZOOM SWITCH
S901
T
W
CN952 (WHT)
ZOOM W 1
S/S GND 2
ZOOM T 3
W951
TO CV-8 BOARD CN202
CHASSIS GND 1
NC 2
(See Page 118)
CN401 (WHT)
AUDIO 5V 1
MIC IN 2
AUDIO GND 3
START/STOP 4
CHASSIS GND 5
TO MA-37 BOARD CN451
(See Page 151)
CN953 (WHT)
1 AUDIO 5V
2 LANC
3 S/S GND
4 CHASSIS GND

- **SIGNAL PATH (ANALOG)**

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC				➡
PB				⇨

THIS NOTE IS COMMON FOR PRINTED WIRIN BOARDS AND SCHEMATIC DIAGRAMS.
(In addition to this , the necessary note is printed i each block.)

- **For printed wiring boards.**
- ○— : indicated a lead wire mounted on the component side.
- —— : indicated a lead wire mounted on the conductor side.
- ● : Through hole.
- ▨ : Pattern from the side which enables seeing.
- ▨ : Pattern of the rear side.
- Circled numbers refer to waveforms.

Caution:

Pattern face side: (Conductor Side)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Component side)	Parts on the parts face side seen from the pattern face are indicated.

- **For schematic diagrams.**
- Caution when replacing chip parts.
  New parts must be attached after removal of chip.
  Be careful not to heat the minuts side of tantalum capacito because it is damaged by the heat.
- All resistors are in ohms, 1/4W unless otherwise noted.
  Chip resistor are 1/16W unless otherwise noted.
  kΩ : 1000Ω , MΩ : 1000kΩ .
- All capacitors are in μF unless otherwise noted. pF: μμF.
  50V or less are not indicated except for electrolytics an tantalums.
- All variable and adjustable resistors have characteristic curve unless otherwise noted.
- —▭— : nonflammable resistor.
- —∿— : fusible resistor.
- ▭ : panel designation.
- ▭ : adjustment for repeair.
- ━ : B+ Line.
- ⇨ : IN/OUT direction of (+, –) B LINE.
- Circled numbers refer to waveforms.

Note:	Note:
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safty. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une piéce portant le numéro spécifié.

When indicating parts by reference number, please include the board name.

RC-47 **RM-59**

SECTION 6
ELECTRICAL PARTS LIST

NOTE:

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

When indicating parts by reference number, please include the board name.

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
  All resistors are in ohms
  METAL: Metal-film resistor
  METAL OXIDE: Metal Oxide-film resistor
  F : nonflammable
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS
  In each case, u: μ, for example:
  uA...: μA..., uPA...: μPA...,
  uPB...: μPB..., uPC...: μPC...,
  uPD...: μPD...
- CAPACITORS
  uF : μF
- COILS
  uH : μH

Ref. No.	Part No.	Description	Remark
	* A-7071-441-A	RC-47 BOARD, COMPLETE ******************** (Ref. No 10, 000 Series)	
		< CONNECTOR >	
CN401	1-566-760-11	PIN, CONNECTOR (PC BOARD) 5P	
CN951	* 1-568-521-11	PIN, CONNECTOR (PC BOARD) 13P	
CN952	* 1-566-182-11	PIN, CONNECTOR (PC BOARD) 3P	
CN953	1-580-057-11	PIN, CONNECTOR 4P	
		< JACK >	
J951	1-565-276-21	JACK, ULTRA SMALL 1P (REMOTE)	
J952	1-507-921-00	JACK (EARDPHONE)	
		< COIL >	
L991	1-410-369-11	INDUCTOR CHIP 1uH	
L992	1-410-369-11	INDUCTOR CHIP 1uH	
L993	1-410-369-11	INDUCTOR CHIP 1uH	
L994	1-410-369-11	INDUCTOR CHIP 1uH	
L995	1-410-192-51	INDUCTOR CHIP 1uH	
		< SWITCH >	
S951	1-553-977-00	SWITCH, SLIDE (STANDBY/LOCK)	
S952	1-571-838-11	SWITCH, TACTIL (START/STOP)	

****

Ref. No.	Part No.	Description	Remark
	* A-7062-819-A	RM-59 BOARD, COMPLETE (RM-53) ******************** (Ref. No. 12, 000 Series)	
		(CAPACITOR)	
C102	1-135-157-21	TANTALUM CHIP 10uF 20% 6. 3V	
C103	1-135-180-21	TANTALUM CHIP 3. 3uF 20% 6. 3V	
C104	1-164-633-11	CERAMIC CHIP 0. 1uF 10% 25V	
C105	1-162-995-11	CERAMIC CHIP 0. 022uF 50V	
C106	1-135-157-21	TANTALUM CHIP 10uF 20% 6. 3V	
C108	1-162-915-11	CERAMIC CHIP 10PF 0. 5PF 50V	
C109	1-162-915-11	CERAMIC CHIP 10PF 0. 5PF 50V	
C120	1-135-145-11	TANTALUM CHIP 0. 47uF 10% 25V	
C121	1-164-634-11	CERAMIC CHIP 1uF 16V	
		(CONNECTOR)	
CN101	* 1-565-876-11	PIN, CONNECTOR (PC BOARD) 4P	
		(DIODE)	
D101	8-719-404-46	DIODE MA110	
D102	8-719-404-46	DIODE MA110	
D120	8-719-404-46	DIODE MA110	
D121	8-719-404-46	DIODE MA110	
		(IC)	
IC101	8-752-831-41	IC CXP80116-838Q	
IC102	8-759-946-03	IC S-8054ALR	
IC103	8-749-922-63	IC SENSOR, REMOCON IS1U604L	
		(COIL)	
L101	1-410-381-11	INDUCTOR CHIP 10uH	

RM-59

Ref. No.	Part No.	Description	Remark
		(TRANSISTOR)	
Q101	8-729-402-42	TRANSISTOR UN5213	
Q102	8-729-402-42	TRANSISTOR UN5213	
Q103	8-729-402-42	TRANSISTOR UN5213	
Q120	8-729-141-48	TRANSISTOR 2SB624-BV345	
Q121	8-729-402-42	TRANSISTOR UN5213	
Q122	8-729-402-42	TRANSISTOR UN5213	
Q123	8-729-402-32	TRANSISTOR 2SD1819A-R	
		(RESISTOR)	
R101	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R102	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R104	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R105	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R106	1-216-820-11	METAL CHIP 820 5% 1/16W	
R107	1-216-022-00	METAL CHIP 75 5% 1/10W	
R108	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R109	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R120	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R121	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R122	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R123	1-216-845-11	METAL CHIP 100K 5% 1/16W	
		(SWITCH)	
S101	1-553-977-00	SWITCH, SLIDE (REMOTE COMMANDER ON/OFF)	
		(CRYSTAL)	
X101	1-567-927-11	VIBLATOR, CERAMIC (16MHz)	

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ark

) Series)

6. 3V
6. 3V
25V
50V
6. 3V

50V
50V
25V
16V

RM-59

Ref. No.	Part No.	Description				Remark
		(TRANSISTOR)				
Q101	8-729-402-42	TRANSISTOR	UN5213			
Q102	8-729-402-42	TRANSISTOR	UN5213			
Q103	8-729-402-42	TRANSISTOR	UN5213			
Q120	8-729-141-48	TRANSISTOR	2SB624-BV345			
Q121	8-729-402-42	TRANSISTOR	UN5213			
Q122	8-729-402-42	TRANSISTOR	UN5213			
Q123	8-729-402-32	TRANSISTOR	2SD1819A-R			
		(RESISTOR)				
R101	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R102	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R104	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R105	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R106	1-216-820-11	METAL CHIP	820	5%	1/16W	
R107	1-216-022-00	METAL CHIP	75	5%	1/10W	
R108	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R109	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R120	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R121	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R122	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R123	1-216-845-11	METAL CHIP	100K	5%	1/16W	
		(SWITCH)				
S101	1-553-977-00	SWITCH, SLIDE (REMOTE COMMANDER ON/OFF)				
		(CRYSTAL)				
X101	1-567-927-11	VIBLATOR, CERAMIC (16MHz)				

Sony Corporation
Personal Video Group

English
91G0935-1
Printed in Japan
© 1991. 7
Published by Customer Relations and Service Group

CCD-F201/F365/F365PAK
RMT-506

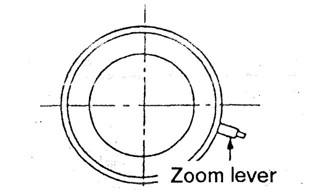
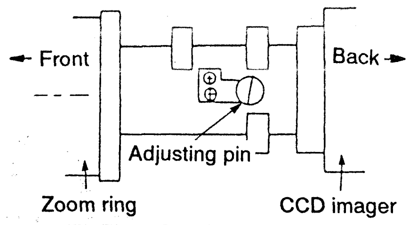
SONY®
SERVICE MANUAL

US Model
Canadian Model
CCD-F201
E Model
CCD-F365/F365PAK

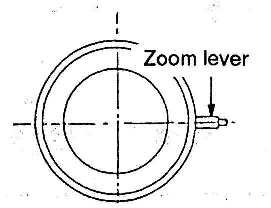
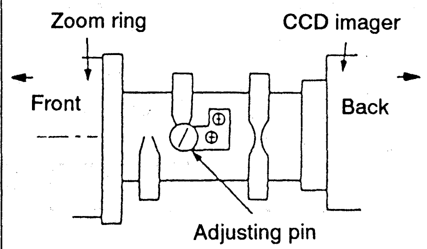
SUPPLEMENT-2

Subject: Type C Lens Addition

- **In addition to the former lens (D type), the new type (C type) is supplemented. How to distingush them is shown below.**

<table>
<tr><th>Distinction
Type</th><th>1. The position of rotating the zoom lever fully to the maximum side</th><th>2. Adjusting pin position of the lens block observed from above</th></tr>
<tr><td>C type lens
(VCL-8508XD)</td><td> Lens block (View from the front)</td><td>

Front
Back
Adjusting pin
Zoom ring
CCD imager

</td></tr>
<tr><td>D type lens
(VCL-8508XB)</td><td> Lens block (View from the front)</td><td>

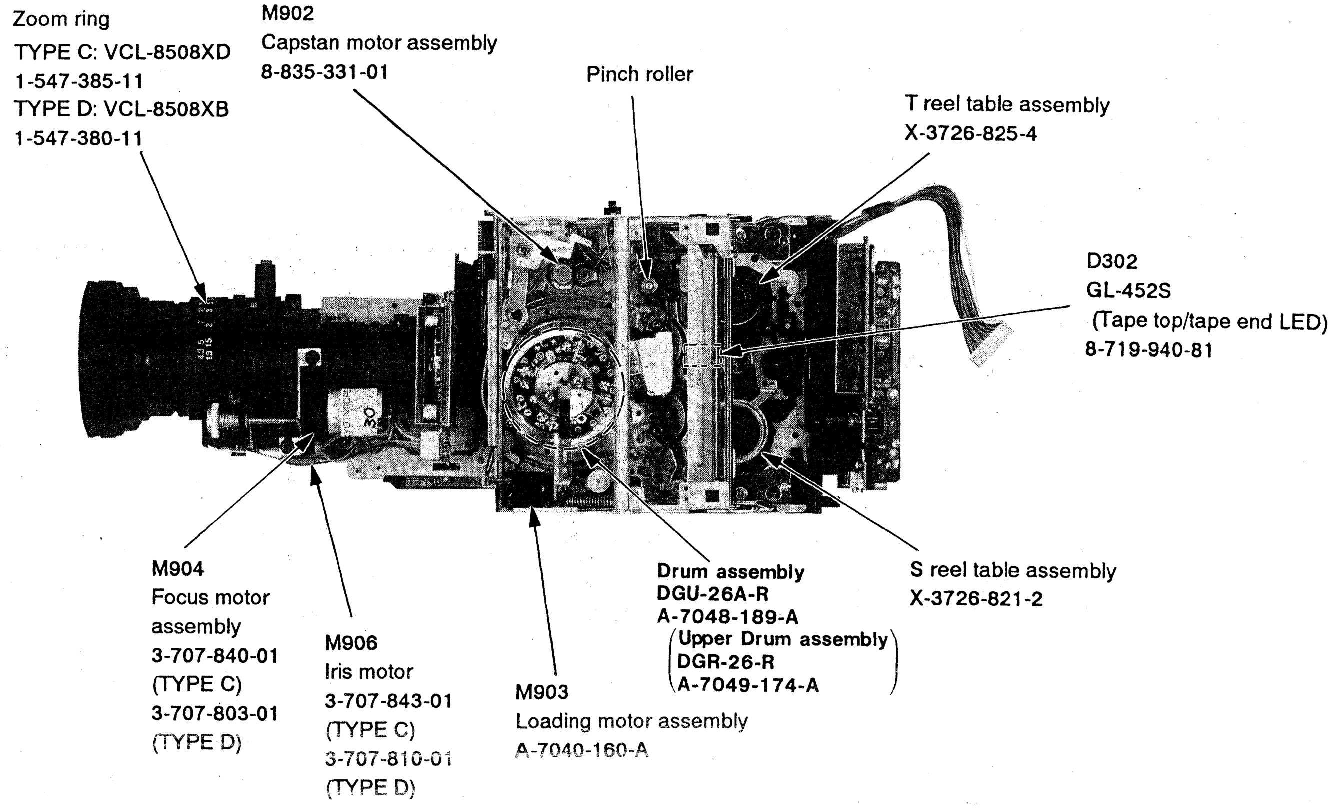
Zoom ring
CCD imager
Front
Back
Adjusting pin

</td></tr>
</table>

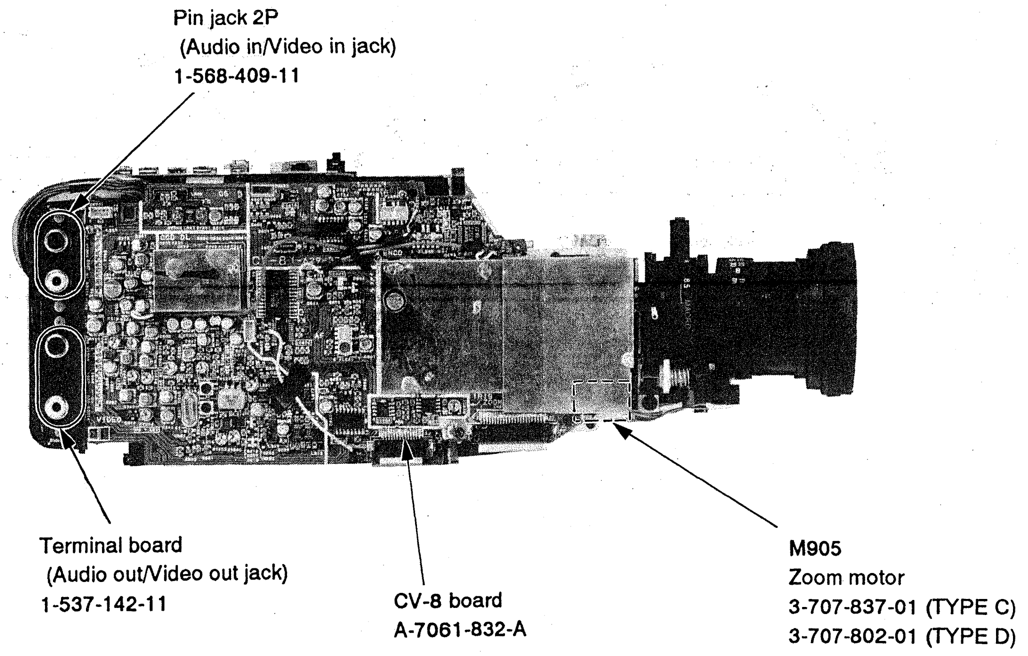
- **The mounting of CD-70 board which employs C type lens is different from that of D type lens. In this SUPPLEMENT-2, CD-70 board of C type is described. As to D type refer to CD-17 board of CCD-F45/F46/F360 Service Manual.**
- **CD-17 board of CCD-F45/F360 is supplied for replacement on CD-70 board.**

2-15. INTERNAL VIEW

– Right Side –


Zoom ring
TYPE C: VCL-8508XD
1-547-385-11
TYPE D: VCL-8508XB
1-547-380-11
M902
Capstan motor assembly
8-835-331-01
Pinch roller
T reel table assembly
X-3726-825-4
D302
GL-452S
(Tape top/tape end LED)
8-719-940-81
M904
Focus motor assembly
3-707-840-01
(TYPE C)
3-707-803-01
(TYPE D)
M906
Iris motor
3-707-843-01
(TYPE C)
3-707-810-01
(TYPE D)
M903
Loading motor assembly
A-7040-160-A
Drum assembly
DGU-26A-R
A-7048-189-A
(Upper Drum assembly
DGR-26-R
A-7049-174-A)
S reel table assembly
X-3726-821-2

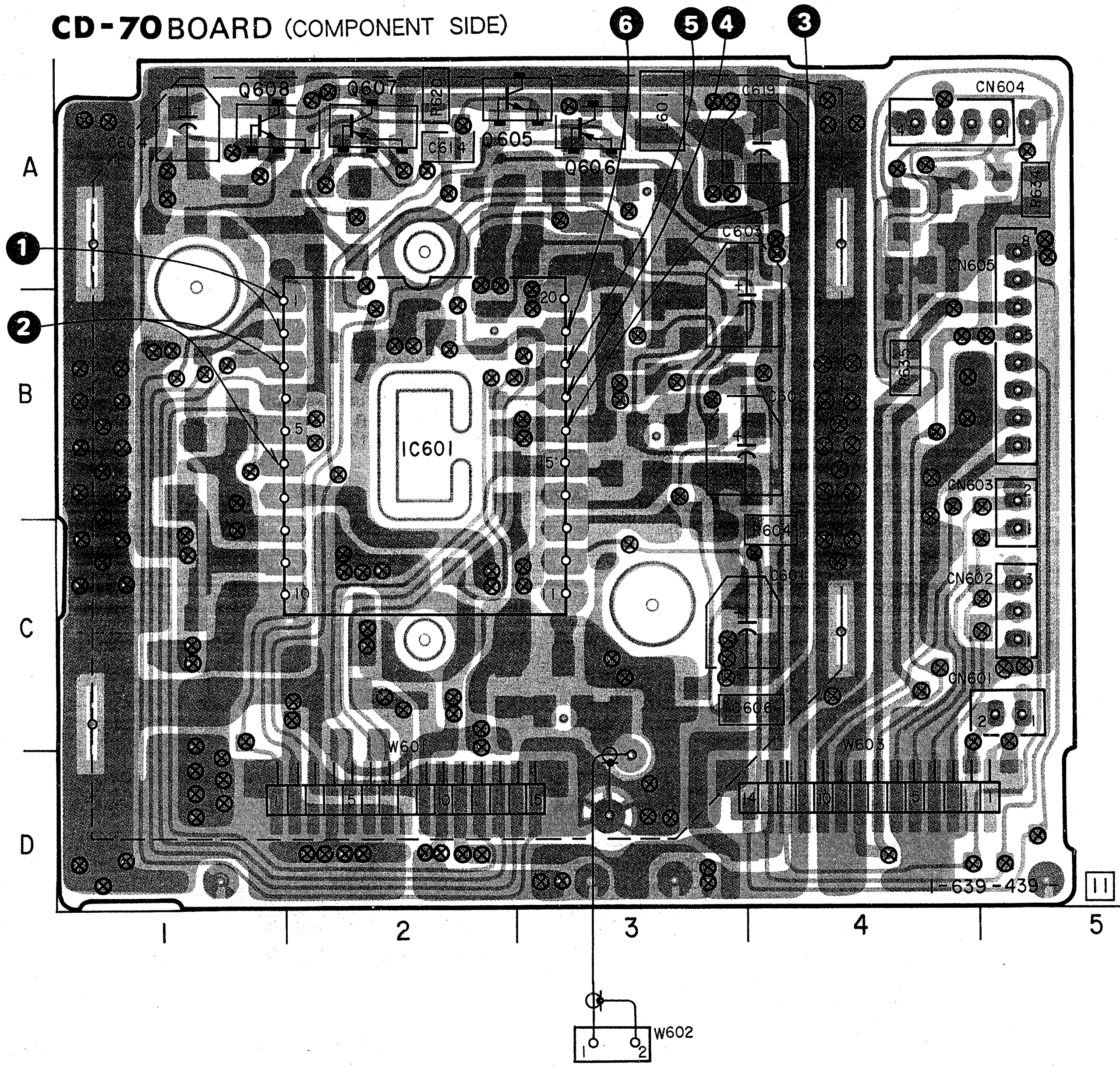
– Left Side –


Pin jack 2P
(Audio in/Video in jack)
1-568-409-11
Terminal board
(Audio out/Video out jack)
1-537-142-11
CV-8 board
A-7061-832-A
M905
Zoom motor
3-707-837-01 (TYPE C)
3-707-802-01 (TYPE D)

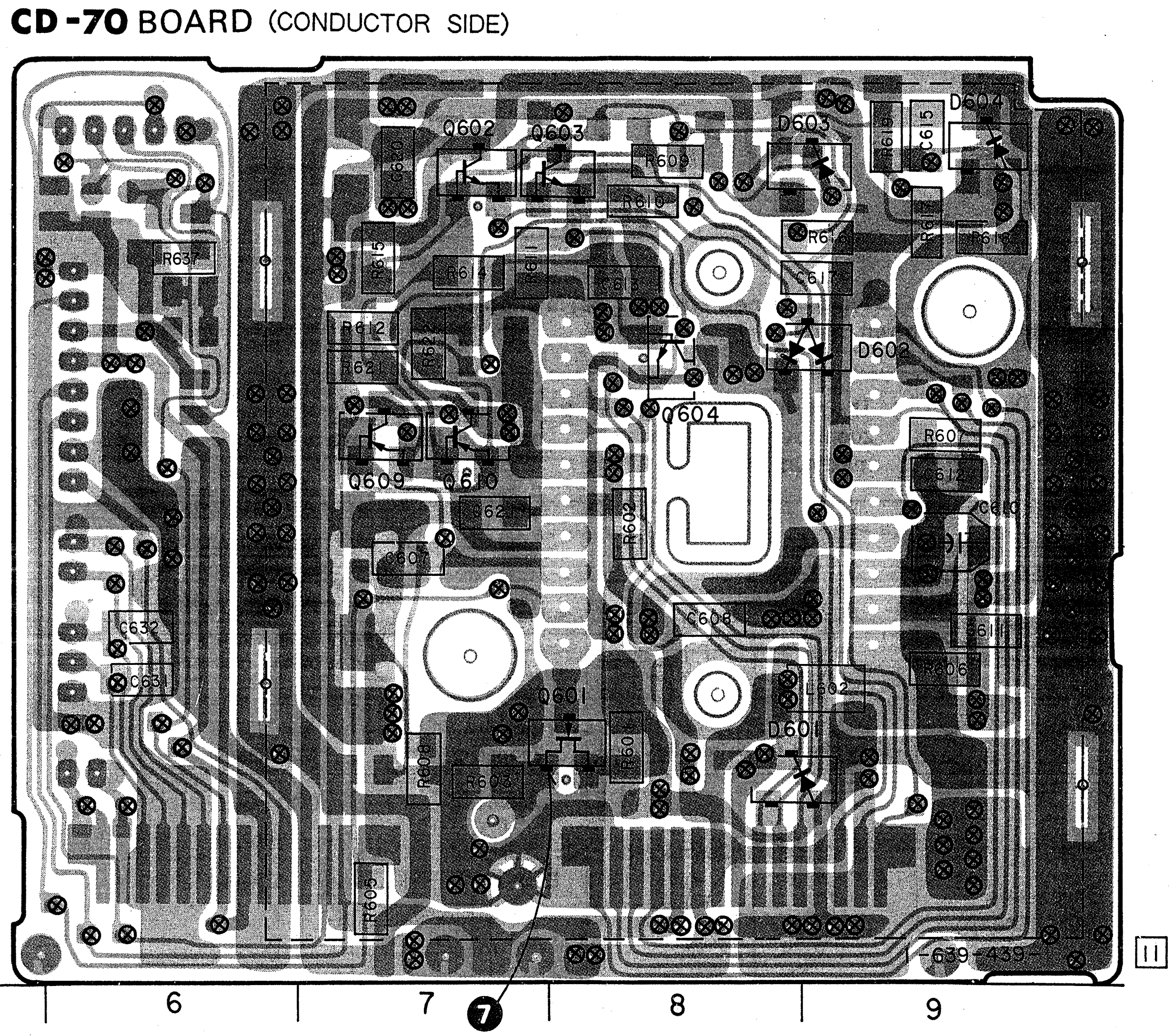
CD-70 (CCD IMAGER/ZOOM, FOCUS) PRINTED WIRING BOARD (TYPE C)

— Ref. No. CD-70 BOARD: 1000 series —

CD-70 BOARD (COMPONENT SIDE)


❻
❺
❹
❸
❶
❷
A
B
C
D
Q608
Q607
Q605
Q606
C614
C619
C603
IC601
20
1
5
10
11
15
CN604
CN605
CN603
CN602
CN601
C604
D601
R606
W601
W603
W602
1
2
1-639-439-11
1
2
3
4
5

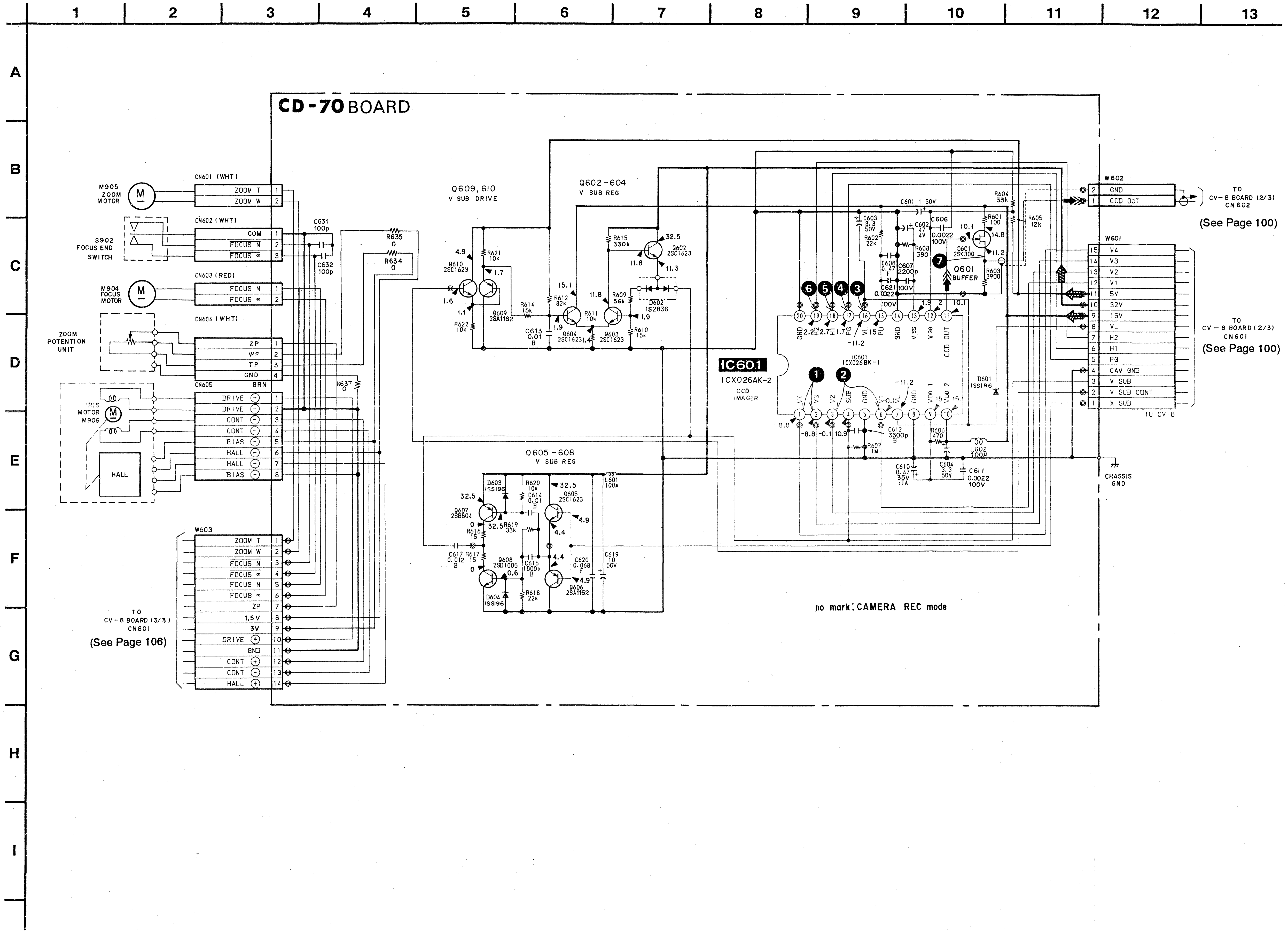
CD-70 BOARD (CONDUCTOR SIDE)


Q602
Q603
D603
D604
C615
R637
R615
R612
R621
C611
Q609
Q610
Q604
D602
R607
C632
C631
C608
C602
Q601
D601
R605
1-639-439-11
6
7
❼
8
9

CD-70 (CCD IMAGER/ZOOM, FOCUS) SCHEMATIC DIAGRAM (TYPE C)

— Ref. No. CD-70 BOARD: 1000 series —

- The pages above correspond to SERVICE MANUAL (Original)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A
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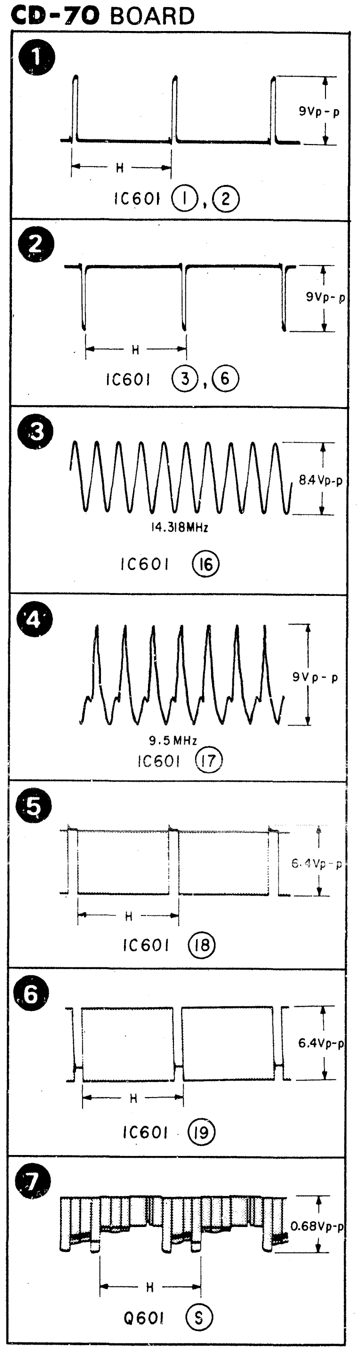
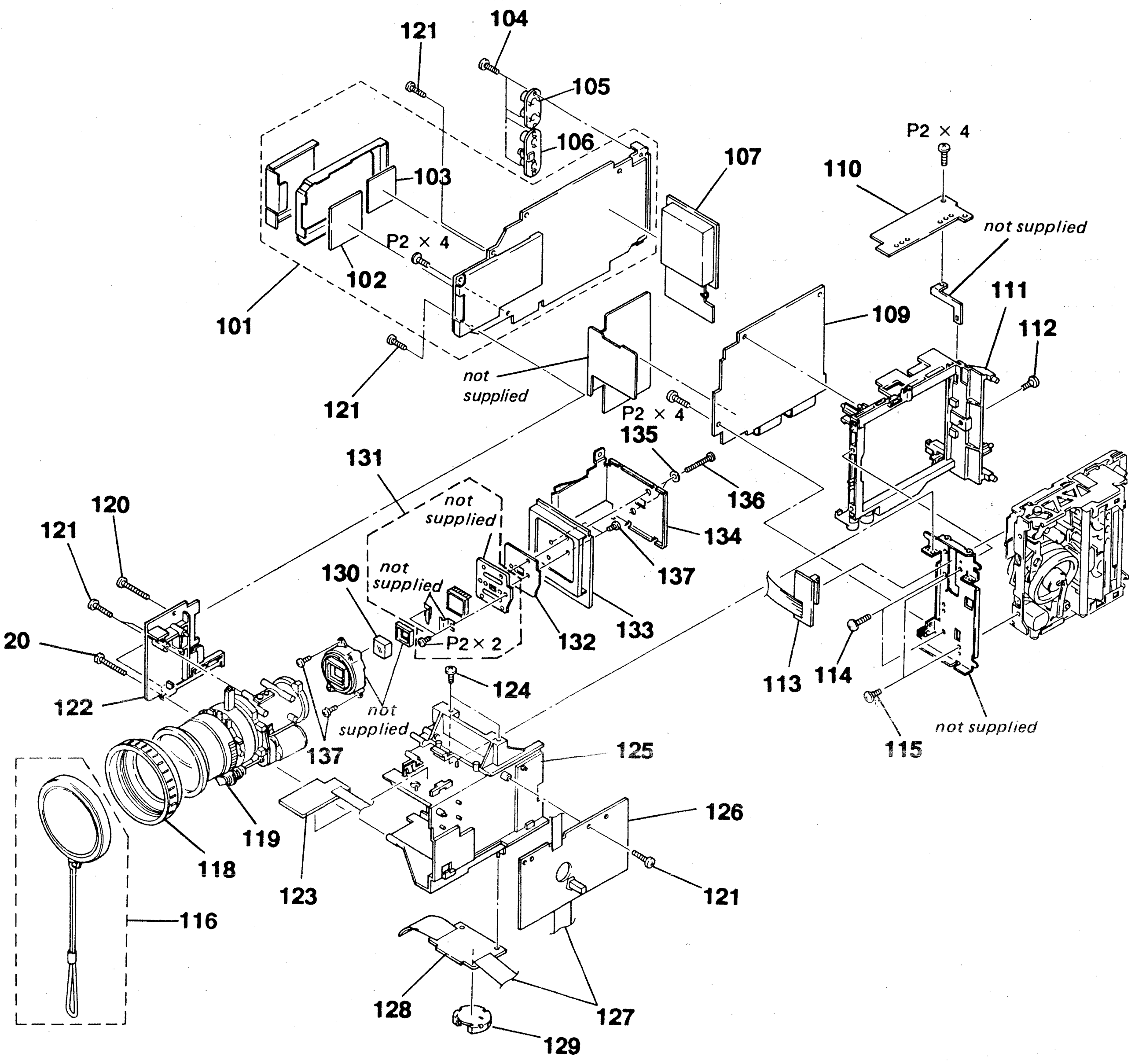
H
I
CD-70 BOARD
M905 ZOOM MOTOR
CN601 (WHT)
ZOOM T
ZOOM W
S902 FOCUS END SWITCH
CN602 (WHT)
COM
FOCUS N
FOCUS ∞
M904 FOCUS MOTOR
CN603 (RED)
ZOOM POTENTION UNIT
CN604 (WHT)
ZP
WP
TP
GND
IRIS MOTOR M906
HALL
CN605 BRN
DRIVE ⊕
DRIVE ⊖
CONT ⊕
CONT ⊖
BIAS ⊕
HALL ⊖
HALL ⊕
BIAS ⊖
C631 100p
C632 100p
R635 0
R634 0
R637 0
W603
1.5V
3V
GND
TO CV-8 BOARD (3/3) CN801
(See Page 106)
Q609, 610 V SUB DRIVE
Q610 2SC1623
Q609 2SA1162
R621 10k
R622 10k
R614 15k
C613 0.01 B
Q602-604 V SUB REG
R615 330k
Q602 2SC1623
R612 82k
Q604 2SC1623
R611 10k
Q603 2SC1623
R609 56k
D602 1S2836
R610 15k
Q605-608 V SUB REG
D603 1SS196
R620 10k
C614 0.01 B
Q605 2SC1623
Q607 2SB804
R616 15
R619 33k
C617 0.012 B
R617 15
Q608 2SD1005
C615 1000p B
C620 0.068 F
C619 10 50V
Q606 2SA1162
D604 1SS196
R618 22k
L601 100μ
IC601
ICX026AK-2
CCD IMAGER
IC601 ICX026BK-1
GND
H2
H1
PG
VL
PD
V SS
V DD
CCD OUT
V4
V3
V2
V1
SUB
Q601 BUFFER
Q601 2SK300
C601 1 50V
C602 47 4V
C603 3.3 50V
R602 22k
C606 0.0022 100V
R608 390
C608 0.47 F
C607 2200p
C621 0.0022 100V
R604 33k
R601 100
R605 12k
R603 3900
D601 1SS196
C612 3300p B
R607 1M
R606 470
L602 100μ
C610 0.47 35V TA
C604 3.3 50V
C611 0.0022 100V
W602
CCD OUT
TO CV-8 BOARD (2/3) CN602
(See Page 100)
W601
5V
32V
15V
CAM GND
V SUB
V SUB CONT
X SUB
TO CV-8
TO CV-8 BOARD (2/3) CN601
(See Page 100)
CHASSIS GND
no mark: CAMERA REC mode



5-4. MAIN BOARD ASSEMBLY

Be sure to read "Precautions for Replacement of CCD Imager" on page 87 of CCD-F45/F46/F360 service manual when changing the CCD imager.


121
104
105
106
103
107
P2 × 4
110
not supplied
102
P2 × 4
101
109
111
112
121
not supplied
P2 × 4
135
131
not supplied
136
134
120
121
130
not supplied
137
P2 × 2
132
133
120
124
113
114
not supplied
122
not supplied
137
125
115
126
119
118
123
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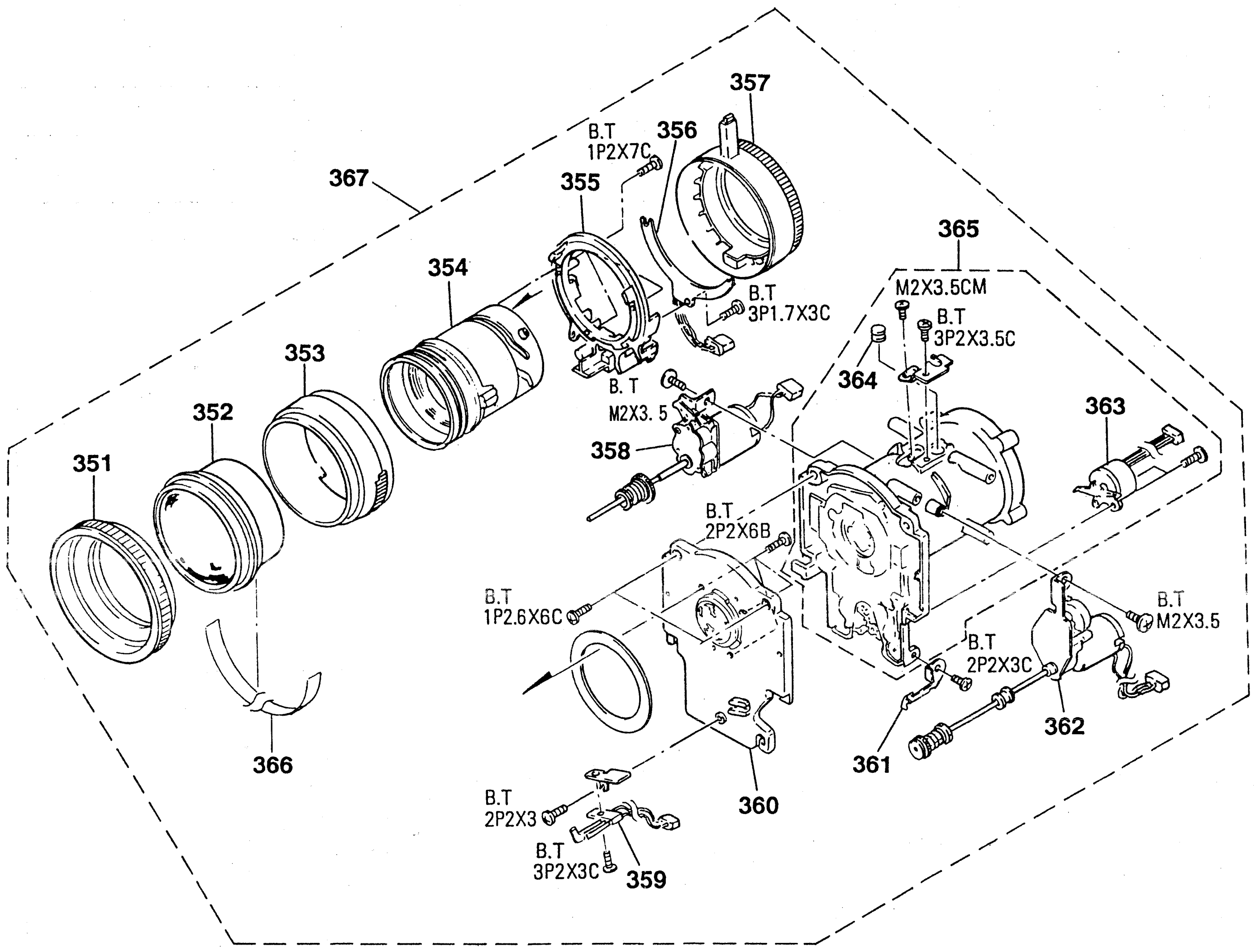
116
128
127
129

No.	Part No.	Description	Remark
101	*A-7061-832-A	CV-8 BOARD, COMPLETE	102-103
102	A-7068-150-A	DT-73A BOARD, COMPLETE (HIC)	
103	A-7068-128-A	MX-7 BOARD, COMPLETE (HIC)	
104	3-719-695-01	SCREW (M1.7X3.5), SPECIAL HEAD	
105	1-568-409-11	JACK, PIN 2P	
106	1-537-142-11	TERMINAL BOARD	
107	*A-7061-745-A	PS-225 BOARD, COMPLETE	
109	*A-7061-380-A	CO-2 BOARD, COMPLETE	
110	*1-631-828-11	VK-3 BOARD	
111	*3-732-932-01	HOLDER, MD	
112	3-732-791-01	SCREW (M2X3)	
113	*1-631-827-11	KS-6 BOARD	
114	3-713-790-01	SCREW (M2X5), TAPPING, P3	
115	3-732-816-01	SCREW, STEP	
116	A-7090-806-A	CAP ASSY, HOOD	
118	3-728-269-01	HOOD	
119	1-547-380-13	LENS, ZOOM (VCL-8508XB) (TYPE D)	
	1-547-385-11	LENS, ZOOM (VCL-8508XD) (TYPE C)	

No.	Part No.	Description	Remark
120	3-713-790-31	SCREW (M2X8), TAPPING, P3	
121	3-713-790-01	SCREW (M2X6), TAPPING, P3	
122	3-737-744-01	HOLDER (B), LENS	
123	*1-631-825-11	DK-4 BOARD	
124	3-719-381-01	SCREW (M2X4)	
125	X-3733-928-1	HOLDER ASSY, LENS (TYPE D)	
	X-3940-723-1	HOLDER (T) ASSY, LENS (TYPE C)	
126	*A-7061-739-A	CK-19 BOARD, COMPLETE	
127	1-575-064-11	CABLE, FLAT (1.0MM PITCH) 18P	
128	*1-629-372-12	LI-5 BOARD	
129	1-550-104-32	HOLDER, BATTERY	
130	A-7090-879-A	FILTER KIT,OPTICAL (OFB-02-02)	
131	A-7030-124-A	IC ICX026BK-2 ASSY (CCD IMAGER)	
132	*3-725-180-01	SHEET, INSULATING, CCD HOLDER	
133	* A-7061-738-A	CD-17 BOARD, COMPLETE (TYPE D)	
	* A-7061-837-A	CD-17 BOARD, COMPLETE (TYPE C)	
134	*X-3733-929-1	SHIELD (CD), ASSY, CAMERA	
135	3-303-961-11	WASHER, POLY	
136	3-335-640-51	SCREW (M2X16)	
137	3-738-519-01	SCREW (M2x3)	

5-5. LENS BLOCK (TYPE C)


357
B.T
1P2X7C
356
367
355
365
354
M2X3.5CM
B.T
3P1.7X3C
B.T
3P2X3.5C
353
364
363
352
B.T
M2X3. 5
351
358
B.T
2P2X6B
B.T
1P2.6X6C
B.T
M2X3.5
B.T
2P2X3C
362
366
361
360
B.T
2P2X3
B.T
3P2X3C
359

Ref. No.	Part No.	Description	Remark
351	3-737-789-01	ADAPTER (T), LENS HOOD	
352	3-707-831-01	RING UNIT (F)	
353	3-707-832-01	METER RINGF (F)	
354	3-707-833-01	MIRROR TUBE ASSY, MAIN	
355	3-707-834-01	RING, INDICATION	
356	3-707-835-01	POTENSION ASSY, ZOOM	
357	3-707-836-01	RING ASSY, ZOOM	
358	3-707-837-01	MOTOR ASSY, PZ GEAR	
359	3-707-566-01	SW ASSY, (E) LIMIT	

Ref. No.	Part No.	Description	Remark
360	3-707-841-01	FRAME, MIDWAY	
361	3-707-839-01	SPRING, BEARING (F)	
362	3-707-840-01	MOTOR ASSY, AF GEAR	
363	3-707-843-01	METER ASSY, EE	
364	3-707-842-01	ADJUSTER, F.B	
365	3-707-838-01	MIRROR TUBE ASSY, REAR	
366	7-632-701-38	TAPE, POLYESTER (#630)	
367	1-547-385-11	LENS, ZOOM (VCL-8508XD) (TYPE C)	

SECTION 6
ELECTRICAL PARTS LIST

NOTE:

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifé.

When indicating parts by reference number, please include the board name.

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- −XX, −X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
  All resistors are in ohms
  METAL : Metal-film resistor
  METAL OXIDE : Metal Oxide-film resistor
  F : nonflammable
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS
  In each case, U : µ, for example:
  UA...: µA..., UPA...: µPA...,
  UPB...: µPB..., UPC...: µPC...,
  UPD...: µPD...
- CAPACITORS
  MF : µF, PF : µµF
- COILS
  MMH : mH, UH : µH

Ref. No.	Part No.	Description	Remark
*	A-7061-837-A	CD-17 BOARD, COMPLETE *********************	
	3-831-441-XX	CUSHION	
		< CAPACITOR >	
C601	1-126-193-11	ELECT 1uF 20% 50V	
C602	1-126-607-11	ELECT CHIP 47uF 20% 4V	
C603	1-126-602-11	ELECT CHIP 3. 3uF 20% 50V	
C604	1-126-602-11	ELECT CHIP 3. 3uF 20% 50V	
C606	1-164-161-11	CERAMIC CHIP 0. 0022uF 10% 100V	
C607	1-164-161-11	CERAMIC CHIP 0. 0022uF 10% 100V	
C608	1-164-005-11	CERAMIC CHIP 0. 47uF 25V	
C610	1-135-145-11	TANTALUM CHIP 0. 47uF 10% 35V	
C611	1-164-161-11	CERAMIC CHIP 0. 0022uF 10% 100V	
C612	1-164-182-11	CERAMIC CHIP 0. 0033uF 10% 50V	
C613	1-164-232-11	CERAMIC CHIP 0. 01uF 50V	
C614	1-164-232-11	CERAMIC CHIP 0. 01uF 50V	
C615	1-163-009-11	CERAMIC CHIP 0. 001uF 10% 50V	
C617	1-163-022-00	CERAMIC CHIP 0. 012uF 10% 50V	
C619	1-126-405-11	ELECT CHIP 10uF 20% 50V	
C620	1-163-036-00	CERAMIC CHIP 0. 068uF 50V	
C621	1-164-161-11	CERAMIC CHIP 0. 0022uF 10% 100V	
C631	1-163-117-00	CERAMIC CHIP 100PF 5% 50V	
C632	1-163-117-00	CERAMIC CHIP 100PF 5% 50V	
		< CONNECTOR >	
* CN601	1-566-195-11	PIN, CONNECTOR (PC BOARD) 2P	
* CN602	1-566-196-11	PIN, CONNECTOR (PC BOARD) 3P	
* CN603	1-566-195-11	PIN, CONNECTOR (PC BOARD) 2P	
* CN604	1-566-197-11	PIN, CONNECTOR (PC BOARD) 4P	
* CN605	1-566-201-11	PIN, CONNECTOR (PC BOARD) 8P	
		< DIODE >	
D601	8-719-400-18	DIODE MA152WK	
D602	8-719-104-34	DIODE 1S2836	
D603	8-719-400-18	DIODE MA152WK	
D604	8-719-400-18	DIODE MA152WK	
		< COIL >	
L601	1-410-393-11	INDUCTOR CHIP 100uH	
L602	1-410-393-11	INDUCTOR CHIP 100uH	
		< TRANSISTOR >	
Q601	8-765-420-02	TRANSISTOR 2SK300-3	
Q602	8-729-100-66	TRANSISTOR 2SC1623	
Q603	8-729-100-66	TRANSISTOR 2SC1623	
Q604	8-729-100-66	TRANSISTOR 2SC1623	
Q605	8-729-100-66	TRANSISTOR 2SC1623	
Q606	8-729-216-22	TRANSISTOR 2SA1162	
Q607	8-729-104-26	TRANSISTOR 2SB804-AW	
Q608	8-729-103-72	TRANSISTOR 2SD1005-BV	
Q609	8-729-216-22	TRANSISTOR 2SA1162	
Q610	8-729-100-66	TRANSISTOR 2SC1623	
		< RESISTOR >	
R601	1-216-025-00	METAL CHIP 100 5% 1/10W	
R602	1-216-081-00	METAL CHIP 22K 5% 1/10W	
R603	1-216-063-00	METAL CHIP 3. 9K 5% 1/10W	
R604	1-216-085-00	METAL CHIP 33K 5% 1/10W	
R605	1-216-075-00	METAL CHIP 12K 5% 1/10W	
R606	1-216-041-00	METAL CHIP 470 5% 1/10W	
R607	1-216-121-00	METAL CHIP 1M 5% 1/10W	
R608	1-216-039-00	METAL CHIP 390 5% 1/10W	
R609	1-216-091-00	METAL CHIP 56K 5% 1/10W	
R610	1-216-077-00	METAL CHIP 15K 5% 1/10W	
R611	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R612	1-216-095-00	METAL CHIP 82K 5% 1/10W	
R614	1-216-077-00	METAL CHIP 15K 5% 1/10W	
R615	1-216-109-00	METAL CHIP 330K 5% 1/10W	
R616	1-216-005-00	METAL CHIP 15 5% 1/10W	
R617	1-216-005-00	METAL CHIP 15 5% 1/10W	
R618	1-216-081-00	METAL CHIP 22K 5% 1/10W	
R619	1-216-085-00	METAL CHIP 33K 5% 1/10W	
R620	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R621	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R622	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R634	1-216-295-00	METAL CHIP 0 5% 1/10W	
R635	1-216-295-00	METAL CHIP 0 5% 1/10W	
R637	1-216-295-00	METAL CHIP 0 5% 1/10W	
		< FLAT CABLE >	
* W601	1-574-152-11	CONNECTOR ASSY	
W601	1-575-152-11	CABLE, FLAT (WITH SHIELD) 15P	
W603	1-574-455-11	CABLE, FLAT (1. 0MM PITCH) 14P	

****

MISCELLANEOUS
****

Ref. No.	Part No.	Description
367	1-547-385-11	LENS, ZOOM (VCL-8508XD) (TYPE C)
IC601	8-752-603-53	IC ICX026BK-1 (CCD IMAGER)

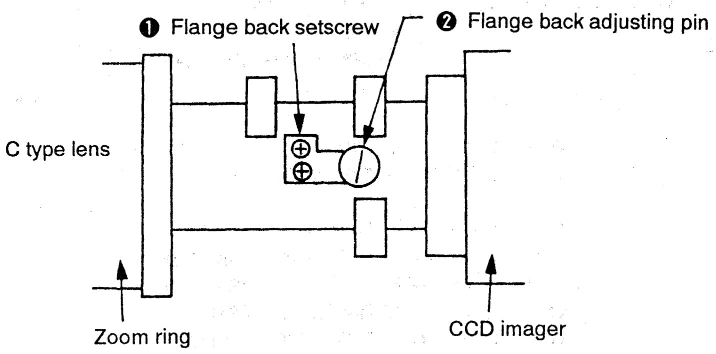
****

ADJUSTMENT

Page 211 of CCD-F45/F46/F360 Service Manual

7-2-1. Flange Back Adjustment

- The adjusting pin position of C type is different from that of D type.
  The pin position of C type is shown below.


❶ Flange back setscrew
❷ Flange back adjusting pin
C type lens
Zoom ring
CCD imager

Correction: The illustration of Fig. 7-12 at page 211 of CCD-F45/F46/F360 Service Manual is not C type lens, but D type lens.

COLLECTION

Page 20

	Incorrect		Correct	
Ref. No	Part No.	Description	Part No.	Description
1	X-3940-632-1	CABINET (FRONT) ASSY (E)	X-3940-933-1	CABINET (FRONT) ASSY (E)

Sony Corporation
Personal Video Group

English
92A0935-1
Printed in Japan
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Published by Customer Relations and Service Group

CCD-F201/F365/F365PAK
RMT-506

SONY®
SERVICE MANUAL

US Model
Canadian Model
CCD-F201
E Model
CCD-F365/F365PAK

SUPPLEMENT-3

Change of RM board

- **Changing RM-59 board to RM-61 board.**
  Printed wiring board, schematic diagram and electrical parts list of RM-61 board are printed on this supplement-3.

ELECTRICAL PARTS LIST

RM-61

NOTE:

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une piéce portant le numéro spécifié.

When indicating parts by reference number, please include the board name.

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
  All resistors are in ohms
  METAL: Metal-film resistor
  METAL OXIDE: Metal Oxide-film resistor
  F : nonflammable
- Hardware (# mark) list is given in the last of this parts list.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS
  In each case, u: μ , for example:
  uA...: μA..., uPA...: μPA...,
  uPB...: μPB..., uPC...: μPC...,
  uPD...: μPD...
- CAPACITORS
  uF : μF
- COILS
  uH : μH

Ref. No.	Part No.	Description				Remark
*	A-7062-945-A	RM-61 BOARD, COMPLETE *********************				
		(Ref. No 13, 000 series)				
		⟨ CAPACITOR ⟩				
C101	1-135-180-21	TANTALUM CHIP	3. 3uF	20%	6. 3V	
C102	1-135-157-21	TANTALUM CHIP	10uF	20%	6. 3V	
C103	1-135-157-21	TANTALUM CHIP	10uF	20%	6. 3V	
C104	1-163-033-00	CERAMIC CHIP	0. 022uF		50V	
C105	1-163-038-00	CERAMIC CHIP	0. 1uF		25V	
C106	1-135-155-21	TANTALUM CHIP	4. 7uF	10%	16V	
		⟨ CONNECTOR ⟩				
* CN101	1-565-876-11	PIN, CONNECTOR (PC BOARD) 4P				
		⟨ DIODE ⟩				
D101	8-719-104-34	DIODE 1S2836				
		⟨ IC ⟩				
IC101	8-749-922-63	IC IS1U60				
IC102	8-759-043-91	IC uPD75104GF-784-3BE				
IC103	8-759-937-56	IC S-8054ALB-LM-S				
		⟨ COIL ⟩				
L101	1-412-029-11	INDUCTOR CHIP	10uH			
		⟨ TRANSISTOR ⟩				
Q101	8-729-901-01	TRANSISTOR DTC144EK				
Q102	8-729-901-01	TRANSISTOR DTC144EK				
		⟨ RESISTOR ⟩				
R101	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R102	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R103	1-216-047-00	METAL CHIP	820	5%	1/10W	
R105	1-216-085-00	METAL CHIP	33K	5%	1/10W	
R106	1-216-017-00	METAL CHIP	47	5%	1/10W	
		⟨ SWITCH ⟩				
S101	1-553-977-00	SWITCH, SLIDE (REMOTE COMMANDER ON/OFF)				
		⟨ CRYSTAL ⟩				
X101	1-577-082-11	VIBRATOR, CERAMIC (4MHz)				

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Personal Video Group

English
92D0934-1
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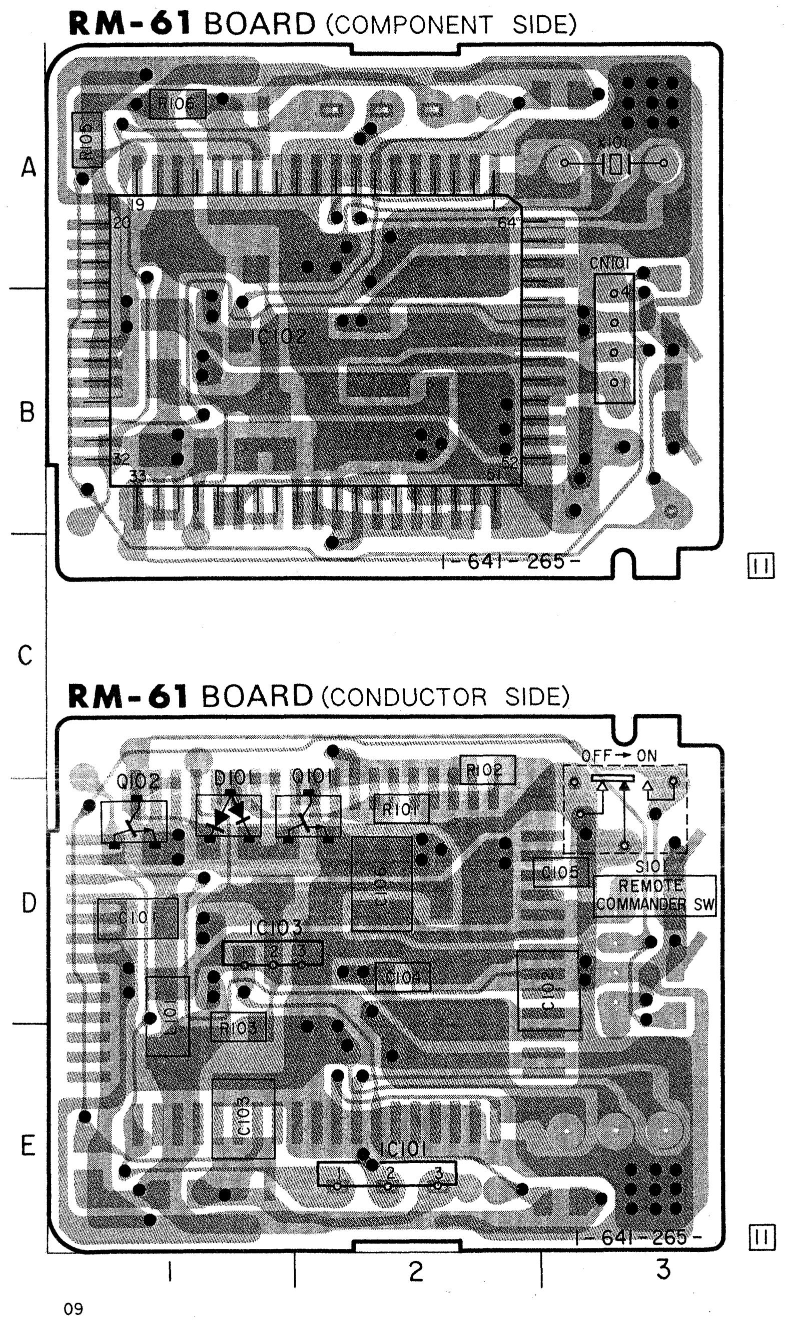
PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

RM-61 (LANC CONTROL & RM RECEIVER) PRINTED WIRING BOARD

— Ref. No. RM-61 BOARD: 13000 series —



RM-61 BOARD (COMPONENT SIDE)
A
B
C
R106
R104
X101
CN101
IC102
19
20
64
32
33
51
52
1-641-265-
11
RM-61 BOARD (CONDUCTOR SIDE)
D
E
Q102
D101
Q101
R102
R101
OFF → ON
S101
REMOTE COMMANDER SW
C105
C106
C101
IC103
C104
C102
R103
L101
C103
IC101
1-641-265-
11
1
2
3
09

* A-7062-945-A RM-61 BOARD, COMPLETE

****************** (Ref. No 13, 000 series)

〈 DIODE 〉

D101	8-719-104-34	DIODE	1S2836

〈 IC 〉

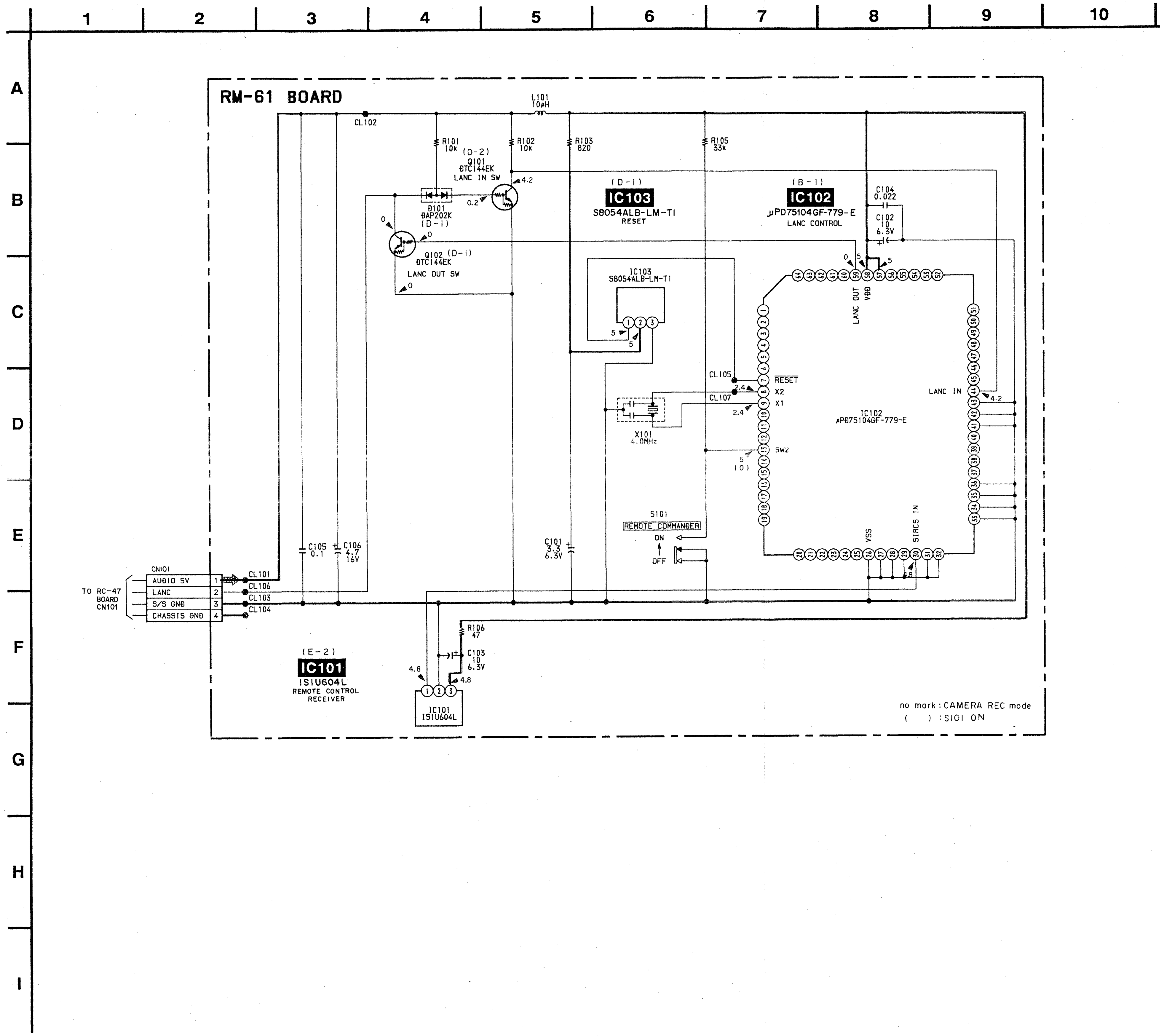
IC101	8-749-922-63	IC	IS1U60
IC102	8-759-043-91	IC	uPD75104GF-784-3BE
IC103	8-759-937-56	IC	S-8054ALB-LM-S

〈 TRANSISTOR 〉

Q101	8-729-901-01	TRANSISTOR	DTC144EK
Q102	8-729-901-01	TRANSISTOR	DTC144EK

RM-61 (LANC CONTROL & RM RECEIVER) SCHEMATIC DIAGRAM

— Ref. No. RM-61 BOARD: 13000 series —



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4
5
6
7
8
9
10
A
B
C
D
E
F
G
H
I
RM-61 BOARD
L101 10μH
CL102
R101 10k
R102 10k
R103 820
R105 33k
(D-2) Q101 DTC144EK LANC IN SW
D101 DAP202K (D-1)
Q102 (D-1) DTC144EK LANC OUT SW
(D-1) IC103 S8054ALB-LM-T1 RESET
(B-1) IC102 μPD75104GF-779-E LANC CONTROL
C104 0.022
C102 10 6.3V
IC103 S8054ALB-LM-T1
LANC OUT
VDD
RESET
X2
X1
SW2
LANC IN
VSS
SIRCS IN
IC102 μPD75104GF-779-E
CL105
CL107
X101 4.0MHz
S101 REMOTE COMMANDER
ON
OFF
C105 0.1
C106 4.7 16V
C101 3.3 6.3V
CN101
AUDIO 5V
LANC
S/S GND
CHASSIS GND
TO RC-47 BOARD CN101
CL101
CL106
CL103
CL104
R106 47
C103 10 6.3V
(E-2) IC101 IS1U604L REMOTE CONTROL RECEIVER
IC101 IS1U604L
no mark : CAMERA REC mode
( ) : S101 ON

394

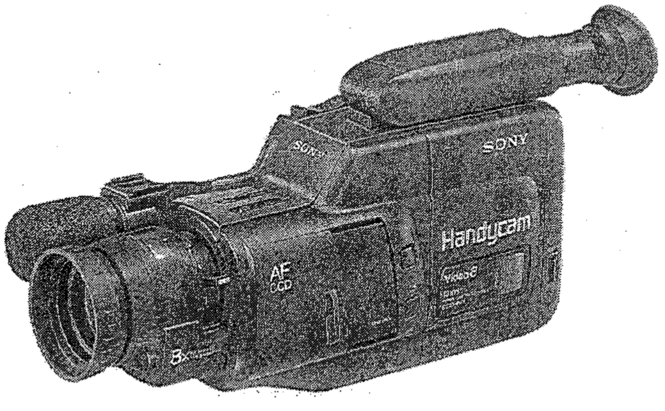
CCD-F45/F46/F360

SERVICE MANUAL

US Model
CCD-F45/F46

Canadian Model
CCD-F45

E Model
CCD-F360


CCD-F45

Handycam
Video 8

For MECHANICAL ADJUSTMENTS, refer to the "U MECHANISM" (9-972-732-11).

SPECIFICATIONS

System

Video recording system	Rotary two heads, Helical scanning FM system
Audio recording system	Rotary head, FM system
Video signal	NTSC color, EIA standards
Usable cassette	8 mm video format cassette
Tape speed	SP: Approx. 1.43 cm/sec. LP: Approx. 0.72 cm/sec. (playback only)
Recording time	SP mode: 2 hours (P6 – 120)
Playback time	SP mode: 2 hours LP mode: 4 hours (P6 – 120)
Fast forward/rewind time	Approx. 6.5 min. (P6 – 120)
Image device	CCD (Charge Coupled Device)
Viewfinder	Electronic viewfinder (black and white)
Lens	Combined 8 × power zoom lens f = 8.5 – 68 mm, F1.6 with macro Filter diameter: 46 mm
Auto focus system	TTL
Color temperature	AUTO HOLD INDOOR 3,200 K OUTDOOR 5,800 K
Minimum illumination	3 lux
Illumination range	3 lux–100,000 lux (0.3–9,294 footcandles)
Recommended illumination	More than 300 lux (28 footcandles)
Aperture correction	Automatic Back light adjustment

Input and output connector

Video output	Phono jack, 1 Vp-p, 75 ohms unbalanced sync negative
Audio output	Phono jack, –7.5 dBs, at output impedance less than 2.2 kilohms
RFU DC OUT	Special minijack, 5V DC
Video input	Phono jack, 1 Vp-p, 75 ohms unbalanced, sync negative
Audio input	Phono jack, –7.5 dBs, input impedance more than 47 kilohms
Earphone jack	Minijack, 8-ohm impedance
Remote jack	Stereo mini-minijack
MIC jack	Minijack, –66 dBs, low impedance With 2.5–3 V DC output, impedance 6.8 kilohms
Microphone power output jack	Special minijack, 5 V DC

– Continued on next page –

MICROFILM

8 VIDEO CAMERA RECORDER

SONY®

Display in the viewfinder

Mode and caution indicators
Caution: ⊗ / ⏏ / ▣ / ⊘ / ⊘
Mode: REC/STBY/PAUSE/
▷, ◁ (Editsearch)/
⏭/⏮/STILL/PLAY/
▷▷/◁◁/SLOW/❚❚▶
LP mode, AM/PM, FOCUS,
▨, WHITE BALANCE, ZERO MEM, shutter speed
Recording/battery lamp

General

Power requirements	Battery compartment 6.0 V (battery pack)/7.5 V (AC power adaptor)/9.0 V (alkaline batteries)
Power consumption	6.9 W (camera recording) including the viewfinder
Installation	Vertically, horizontally
Operating temperature	0°C to 40°C (32°F to 104°F)
Storage temperature	−20°C to +60°C (−4°F to +140°F)
Dimensions	Approx. 122 × 153 × 317 mm (w/h/d) ($4\,^{7}/_{8} \times 6\,^{1}/_{8} \times 12\,^{1}/_{2}$ in.) including lens hood
Weight	Approx. 1.2 kg (2 lb 10 oz) excluding the battery and cassette
Microphone	Electret condenser microphone, uni-directional monaural type
Supplied accessories	• Battery pack NP-55 (1) • AC power adaptor AC-V30 (1) • RFU adaptor RFU-89UCA (1) (CCD-F45/F46) RFU adaptor RFU-89NA(1) (CCD-F360) • Antenna selector (1) • Lithium battery CR2025 (1) • Lens cap (1)

Design and specifications are subject to change without notice.

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer:

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
3. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
4. Look for parts which, though functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
5. Check the B+ voltage to see it is at the values specified.

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!

LES COMPOSANTS IDENTIFIÉS PAR UNE MARQUE ⚠ SUR LES DIAGRAMMES SCHÉMATIQUES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈCES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPLÉMENTS PUBLIÉS PAR SONY.

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The color reproduction standard frame is contained after the adjustment element location of camera adjustment parts.

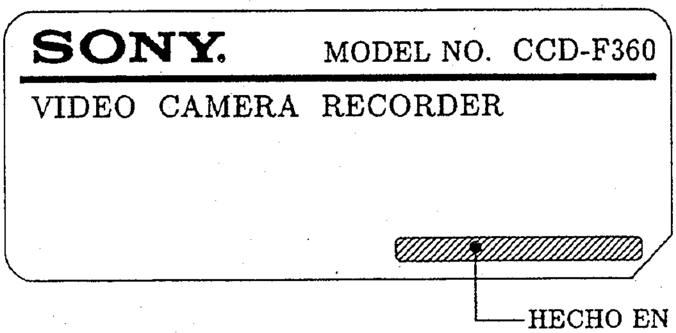
CAUTION

1. In this unit, A or B type EVF is used.

Type A	Color of connecting harness (VF-21) which connectes EVF and CV-8 board is gray. (VF-14 board)
Type B	Color of connecting harness (VF-21) is white. (VF-22 board)

Note : Distinction between Venezuelan model and other models.

Model number label



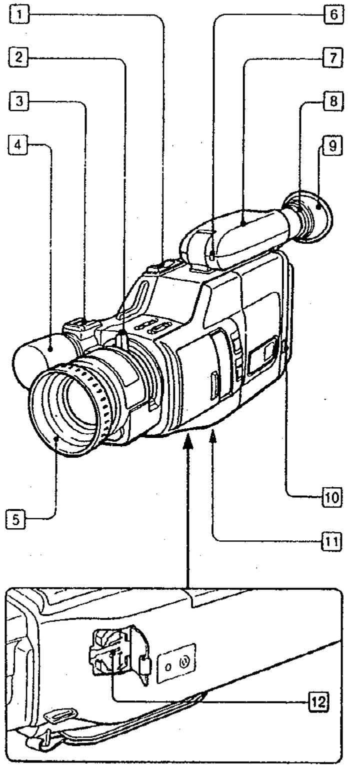
HECHO EN VENEZUELA : Venezuelan model
MADE IN JAPAN : Other models

SECTION 1
GENERAL

This section is extracted from CCD-F45 instruction manual.

Location and Function of Parts and Controls

A-1



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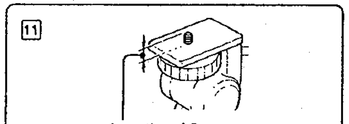


Less than 6.5mm
Moins de 6,5 mm
Menos de 6,5 mm

For details on the use of each control, refer to the pages indicated in the circle.

A-1

1 Power zoom button (52)

2 Zoom lever and Macro button (52) (53)

3 Accessory shoe
Attach an external microphone video light, etc.

4 Built-in microphone (monaural)

5 Lens hood
Also functions as focus ring.

6 Camera recording/battery lamp
Lights during camera recording. It blinks when the battery is exhausted.

7 Viewfinder ⑪
The picture being recorded or played back can be monitored in monochrome here. Also, data such as caution indicators and function mode are displayed on the viewfinder screen.

8 Viewfinder lens adjustment ring ㉖
Adjust to your eyesight to assure good focus. Be sure to adjust this ring when shooting for the first time.

9 Eyecup

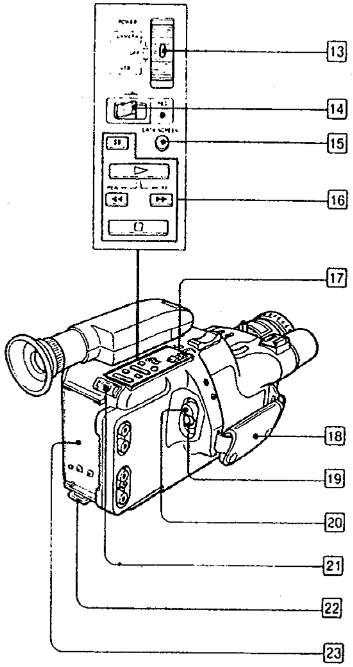
10 BATT (battery eject) knob ⑯

11 Tripod receptacle (bottom)

12 Lithium battery compartment ㉒

Note when attaching a tripod not manufactured by Sony
When attaching a tripod not manufactured by Sony, the length of the camera mounting screw must be less than 6.5mm.
Otherwise the screw may damage the inner parts of the camera.

A-2



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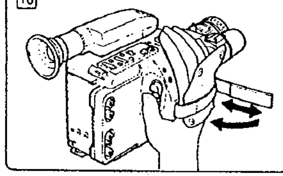


Location and Function of Parts and Controls

A-2

13 POWER switch
CAMERA: For camera recording
VTR: For playing back or editing tapes
OFF: Power off

14 ● REC (recording) switch (80)
Slide in the direction of the arrow.

15 DATA SCREEN button (70)
Press to display the indication on the viewfinder screen on the TV.

16 Tape transport buttons
▷ (playback)
►► FF (fast forward)
◄◄ REW (rewind)
□ (stop)
❚❚ (pause)

17 EDIT switch (81)
Normally set it to the OFF position. When editing tapes, set in the direction of the arrow (ON).

18 Grip strap
Adjust the length so that your thumb can easily manipulate the START/STOP button.

19 START/STOP button
Press to start and stop camera recording.

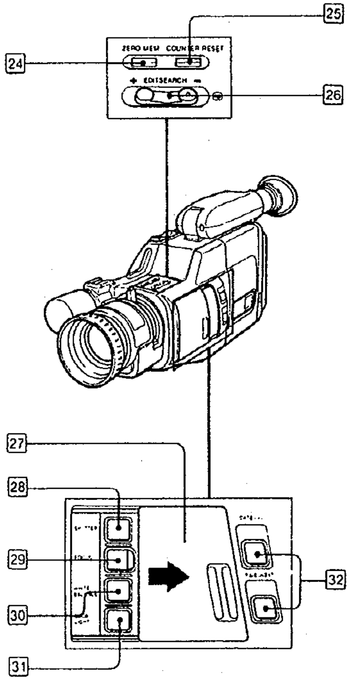
20 STANDBY switch
Slide up to STANDBY to set the unit to recording pause mode.

21 EJECT (cassette eject) button ㉓

22 Hook for shoulder strap
Attach a shoulder strap.

23 Battery mounting surface

A-3



Location and Function of Parts and Controls

A-3

24 **ZERO MEM** (zero memory) button (60) (80) (82)
Used to memorize the counter zero point.

25 **COUNTER RESET** button (60) (80) (82)
Press to reset the counter to zero.

26 **EDITSEARCH** (and recording review) button ㉛ (70)

27 **AUTO LOCK** cover ⑱
Keep this cover closed when adjusting the focus, white balance, or shutter speed automatically. To adjust these manually, slide open this cover so that the buttons inside can be seen.

28 **SHUTTER SPEED** button ⑱
Used to select the shutter speed.

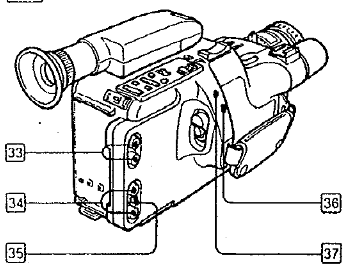
29 **FOCUS** button ⑱
Used for manual focusing.

30 **WHITE BAL** (white balance) button ㊶
Used for manual white balance adjustment.

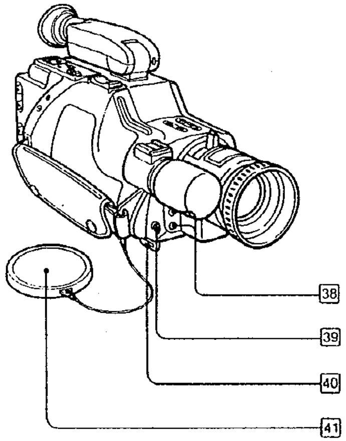
31 **BACK LIGHT** button (56)

32 **DATE** (+) and **TIME** (NEXT) buttons (56)
Press to display or turn off the date or time.

A-4



A-5



Location and Function of Parts and Controls

A-4

33 **VIDEO/AUDIO IN** (input) jacks (phono jacks)

34 **VIDEO/AUDIO OUT** (output) jacks (phono jacks)

35 **RFU DC OUT** (RFU adaptor DC output) jack (special minijack)
Supplies power to the RFU adaptor.

36 🎧 (earphone) jack (minijack)

37 **REMOTE** connector (stereo mini-minijack)
Connect an optional GP-80 Remote Commander or wired Remote Commander RM-95.
Do not connect other equipment.

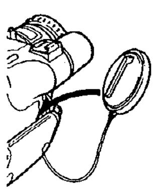
A-5

38 **MIC** jack and **DC OUT** (microphone power output) jack
Connect an external microphone.
The MIC jack accepts Sony "plug-in-power" microphones and supplies power to them.

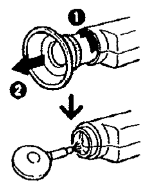
39 **REC START/STOP** button for low position

40 **Hook for shoulder strap**
Attach a shoulder strap.

A-6



A-7



A-6

41 **Lens cap**
Squeeze both sides of the lens cap to remove it. Hook it to the grip strap so it won't be lost or hanging loose while recording.

A-7

To remove dust from inside the viewfinder
Detach the eyecup as illustrated and clean the surface of the cathode ray tube with a blower.

Power Sources

Selection of Power Sources

This manual shows the operations on one of the following power sources.

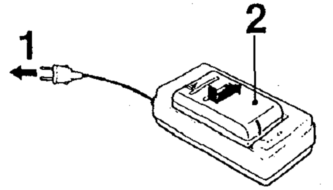
Place		Power source	Accessory to be used
Place	Indoors	House current	AC power adaptor AC-V30 or AC-V55 (page 16)
	Outdoors	Battery pack	Battery pack NP-55 or large capacity battery pack NP-77 and NP-66H (available soon) (page 16) Battery case EBP-55 (page 18)
	In the car	12 V or 24 V car battery	DC pack DCP-55 (page 20) (DCC-16B car battery cord supplied)

Notes on power source

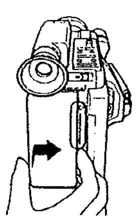
- Disconnecting the power source or removing the battery pack during recording or playback may damage the inserted cassette tape. If this is done by accident, supply the power again immediately and turn on the power switch.
- Be careful not to let any metal object touched on the metal part on the battery pack or AC power adaptor. When the battery pack is not to be used, keep it in its case.

Optional Accessories for Charging
- **AC-V55 AC power adaptor**
  Two battery packs can be charged simultaneously.
- **DC-V30 car battery charger**
  Connect to the cigarette lighter socket of a car to charge an NP-55 or NP-77 battery pack, or to supply power to Sony 8 mm video equipment that operates only on NP-55 or NP-77.

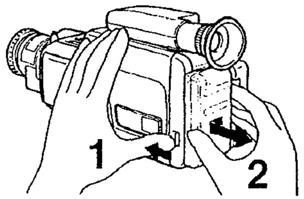
B-1



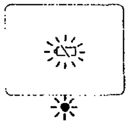
B-2



B-3



B-4



Battery Pack — NP-55 or Large Capacity Battery Pack NP-66H/77

First, charge the battery pack. B-1
Use the AC-V30 AC power adaptor.
The charging time is about 1 hour for an NP-55 battery pack, about 1 hour and 40 minute for an NP-66H battery pack or about 2 hours for an NP-77 battery pack.

1 Connect the AC-V30 to a wall outlet.
2 Attach the battery pack to the AC-V30.
  Align the grooves on the battery pack with those on the AC-V30, and while pressing the battery pack, slide it as illustrated.

To attach the battery pack to the video camera recorder B-2
Align the right side of the battery pack with the line on the recorder, and while pressing the battery pack, slide it to the right.
Make sure that the battery is fitted completely to the mounting surface. Imperfect fit may damage the projections on the recorder.

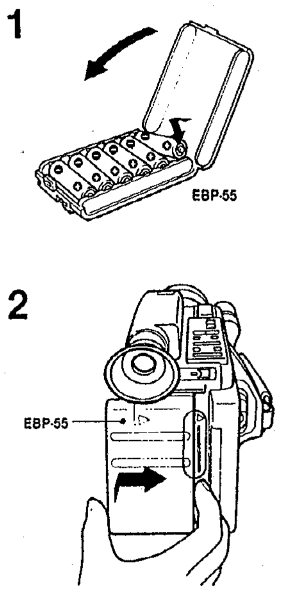
To remove the battery pack B-3
While pressing the BATT knob in the arrow direction, slide and pull out the battery pack as illustrated.

Battery life
A fully-charged NP-55 battery pack provides approximately 40 minutes of continuous camera recording, an NP-66H provides approximately 70 minutes of continuous camera recording and an NP-77 provides approximately 80 minutes of continuous camera recording.

When the video camera recorder is not in use, remove the battery pack.
If the battery is installed, even if the POWER switch is set to OFF, a very small amount of electric current flows.

When the battery becomes weak B-4
The ⊂⊐ indication and red lamp blink in the viewfinder.
Replace the battery pack with the fully charged one.

B-5



Notes
- The video camera recorder consumes power even in the recording pause mode. When recording short scenes using the recording pause mode, the battery life is less than half that of continuous recording.
  When recording is not to be started soon, turn off the power with the STANDBY switch.
- If the battery pack is not fully charged or if it is used in a cold place, its operating time is also shortened.

Battery Case EBP-55 B-5

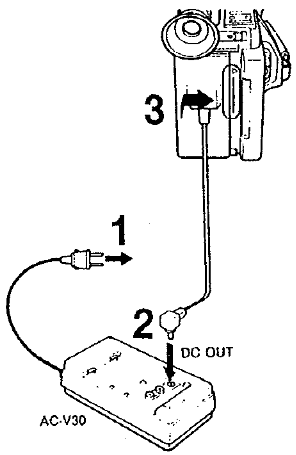
1 Insert the six R6 (size AA) alkaline batteries into the battery case.
2 Align the right side of the battery case with the line on the recorder, and while pressing the battery case, slide it to the right.

To remove the battery case
While pressing the BATT knob on the recorder, slide and pull out the battery case.

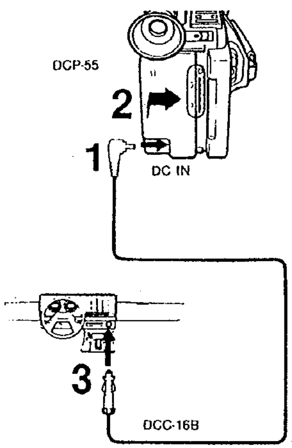
Battery life
With new alkaline batteries, the battery case provides approximately 40 minutes of continuous camera recording when used indoors.

Notes on the battery case
- Be sure to use the alkaline batteries.
- The battery case cannot be used in a cold place.
- The ⌧ indication may not blink when the batteries in the battery case become weak, as the voltage of the battery lowers suddenly. If the cassette compartment does not open, replace the batteries.

B-6



B-7



House Current — Using AC Power Adaptor B-6

1 Connect the AC power adaptor to a wall outlet.
2 Insert the connecting cord supplied with the AC-V30 AC power adaptor into the DC OUT jack on the AC power adaptor.
3 Align the right side of the connecting plate with the line on the recorder, and while pressing the connecting plate, slide it to the right.

To remove the connecting plate for the AC power adaptor from the video camera recorder
While pressing the BATT knob on the recorder, slide and pull out the connecting plate.

The optional AC-V55 AC power adaptor can also be used to operate this recorder on house current.

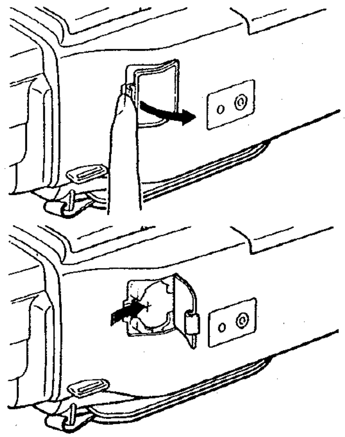
Car Battery — Using the DC Pack B-7

1 Insert the DCC-16B car battery cord supplied with the DCP-55 DC pack into the DC IN jack on the DC pack.
2 Align the right side of the DC pack with the line on the recorder, and while pressing the DC pack, slide it to the right.
3 Connect the DCC-16B car battery cord to the cigarette lighter socket of a car (12 V or 24 V).

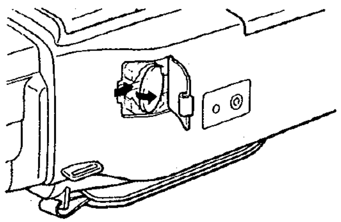
To remove the DC pack from the video camera recorder
While pressing the BATT knob on the recorder, slide and pull out the DC pack.

The optional AC-V55 AC power adaptor and the DCC-16AW car battery cord can also be used to operate this recorder on a 12V or 24V car battery.

C-1



C-2



Power Sources

Lithium Battery C-1

To insert the lithium battery
This unit uses a lithium battery to activate the clock. Before operating the unit for the first time, install the supplied lithium battery:

1 Open the cover of the lithium battery compartment on the bottom.
2 Install the supplied CR2025 lithium battery with the ⊕ side facing out.
3 Close the cover.

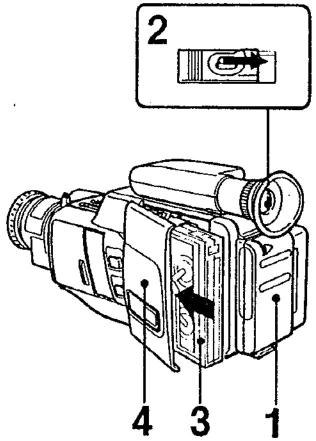
To remove the lithium battery C-2
Press the side of the battery in the direction as indicated for installation.

Lithium battery life
Approximately 1 year in normal operation.
When the lithium battery becomes weak, the time indication will blink on the viewfinder screen for about 5 seconds, whenever the POWER switch is set to CAMERA.
In this case, replace the battery with a Sony CR2025 or Duracell DL-2025 lithium battery.
Use of another battery may present a risk of fire or explosion.
After replacing the battery, readjust the date and time. (If the battery is replaced with the battery pack attached, the readjustments are not necessary.)

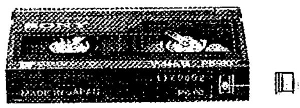
Notes on lithium battery
- Keep the lithium battery out of the reach of children.
  Should the battery be swallowed, immediately consult a doctor.
- Wipe the battery with a dry cloth to assure a good contact.
- Be sure to observe the correct polarity when installing the battery.
- Do not hold the battery with metallic tweezers, otherwise a short-circuit may occur.
- Do not break up the battery nor throw it into a fire, which might cause it to explode. Carefully dispose of the used batteries.

WARNING
Battery may explode if mistreated.
Do not recharge, disassemble or dispose of in fire.

D-1



D-2



Cassette Care

Cassette Insertion D-1

1 Connect a power source.
2 Slide the EJECT button while pressing the center blue button.
The lid of the cassette compartment will open.
3 Insert a cassette with the window facing outside.
4 Press the PUSH mark to close the cassette holder.

Cassette Ejection

1 Make sure that a power source is connected.
2 Slide the EJECT button while pressing the center blue button.
3 Take out the cassette and press the PUSH mark to close the cassette holder.

To Prevent Accidental Erasure D-2

Slide out the tab on the cassette so that it covers the opening. (A red mark will appear.)

To re-record on the cassette, slide the tab in to uncover the opening.

Notes
- When inserting or removing the cassette, stand the unit upright. Otherwise, the cassette may be damaged.
- Never insert anything in the small holes on the rear of the cassette. These holes are used to sense the kind of tape, thickness of tape, or if the tab is out or in, etc.
- To record from the beginning of the tape, run the video camera recorder for about 15 seconds at the beginning of a cassette before recording. It will avoid missing the starting point during playback on a video cassette recorder.

Camera Operation

Adjustment of the Viewfinder Lens

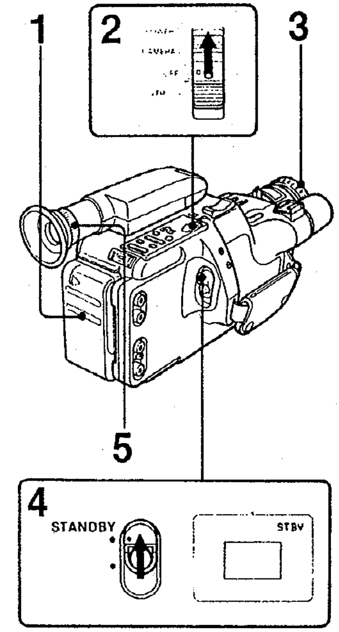
The position of the viewfinder lens for optimum vision varies depending on the person. E

1 Connect a power source.
2 While pressing the small button, set the POWER switch to CAMERA.
3 Remove the lens cap.
4 Slide the STANDBY switch up.
5 Turn the viewfinder lens adjustment ring so that the indicator displayed on the viewfinder screen comes into sharp focus.

Adjustment of the viewfinder lens is necessary only for your initial use, or for use after someone else.

Note
If you leave the unit in the recording pause mode for 5 minutes or more, the unit will be automatically turned off. To resume recording pause mode, slide the STANDBY switch down once and slide it up again. To start recording, press the START/STOP button.

E



Selection of the Automatic or Manual Adjustments

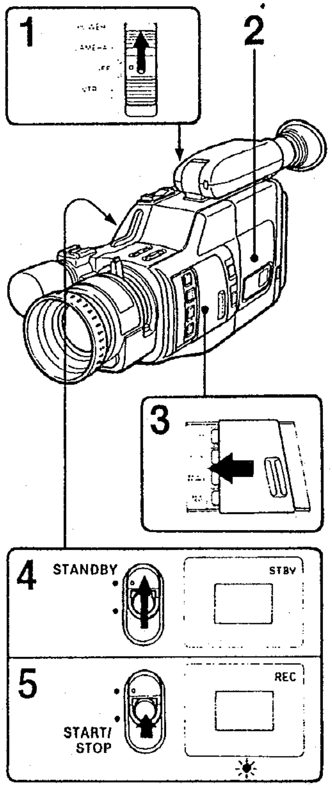
When the AUTO LOCK cover is closed, the white balance, shutter speed (1/60), and focus are adjusted automatically. But under certain circumstances, manual adjustment is better for effective recording.

When the AUTO LOCK cover is slid open, each manual function works as follows.

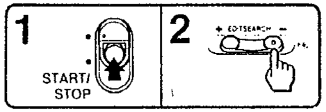
Each push of the button cyclically changes each function and the indication on the viewfinder changes.	
WHITE BALANCE See page 42.	No indication → HOLD → ☼ → ✧ (Auto)
SHUTTER SPEED See page 48.	No indication (1/60) → 100 → 250 → 1000 → 2000 → 4000 (1/100)(1/250)(1/1000)(1/2000)(1/4000)
FOCUS See page 38.	Auto focusing zone → ■ (Auto) (Manual)
BACK LIGHT See page 46.	No indication → ▨ (Back light)

Notes
- Just after the battery pack has been attached to the recorder, the AUTO LOCK function will work, even if the AUTO LOCK cover is opened.
- If the AUTO LOCK cover is closed after each function is adjusted manually, and then opened again, the previous manual setting willl be recalled.

F-1



F-2



Easy Camera Recording with Automatic Adjustment

How to Record

F-1

1 While pressing the small button, set the POWER switch to CAMERA.
2 Insert the cassette.
3 Keep the AUTO LOCK cover closed.
4 Slide the STANDBY switch up.
The unit will enter the recording pause mode.
5 Press the START/STOP button.
Recording will start.

Check on the viewfinder screen
STBY: Displayed during recording pause mode.
REC: Displayed during recording.

To stop recording
Press the START/STOP button again.
The unit will enter the recording pause mode.
Avoid rough handling or mechanical shock to the unit. A smooth transition between scenes may not be made.

F-2

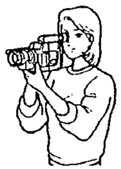
To check the last portion of the previous recording (Recording review)
1 Set the recorder in recording pause mode by pressing the START/STOP button.
2 Press the – ⊜ EDITSEARCH button momentarily.

The last few seconds of the recorded portion are rewound and then the recorded picture is monitored on the viewfinder screen. The unit then enters the recording pause mode.

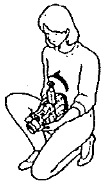
If the picture has not been recorded
The video head may be contaminated. Clean the heads using the Sony V8-25CL video head cleaning cassette.

After using
Slide the STANDBY switch down and set the POWER switch to OFF. (You need not press the center button when setting the switch to OFF.)

F-3



F-4



Easy Camera Recording with Automatic Adjustment

Hold the camera recorder as in the illustration.
If your nose touches the recorder, adjust the angle of the viewfinder. F-3

F-4

For low position recording
The viewfinder can be turned 90 degrees up.
1 Slide the STANDBY switch up.
2 Press the START/STOP button on the right front.

Note on power source
If the POWER switch is moved during recording, the tape will stop.

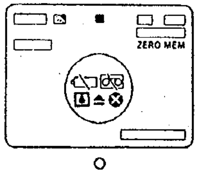
Notes on light sources
- Should you shoot a subject in bright conditions such as sunlight just after shooting in a dark place, the picture may not appear on the viewfinder screen. In this case, move the camera away from the subject to resume the normal condition.
- A vertical band may appear when a subject such as a candle flame or a light is shot against a dark background.

Notes on playback on another VCR
- To view the picture which has been recorded on this unit, set the monitor switch of the recorder for playback to the STD (standard) position.
- When recording on this unit using a tape on which PCM stereo sound has previously been recorded, set the monitor switch of the video cassette recorder for playback to the STD (standard) position. Otherwise, the sound may not be heard or may be distorted.

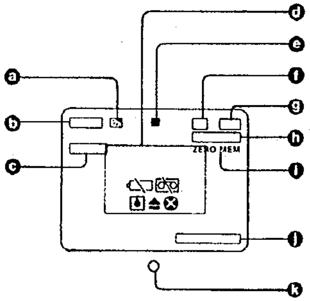
Notes on automatic adjustment
- During recording with auto focusing, do not turn or stop the focus ring (lens hood) forcibly.
- Keep the lens clean.

The camera recording with automatic adjustment may not produce optimum results under certain conditions. In this case, manually adjust the focus, white balance, back light and shutter speed. See pages 38, 42, 46 and 48.

F-5



F-6



Easy Camera Recording with Automatic Adjustment

Indications inside the Viewfinder

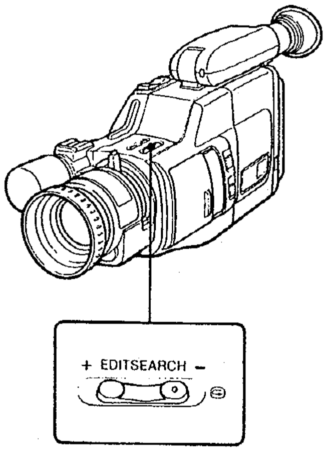
Indications for caution F-5

⌧	Slow blinking • The battery is weak. Fast blinking • The battery is exhausted.
⊠	Slow blinking • No cassette is inserted. • The tab on the cassette is out (red). Fast blinking • The tape is at its end.
⏏	Blinking • A fault has occurred in the unit. See page 122.
⊗	Blinking • The gap of the video head is clogged. (Head contamination) See page 122.
▣	Blinking • Moisture has condensed inside the unit. See page 104.

Indications for showing the function in use F-6

ⓐ	The back light function has been activated.
ⓑ	Indicates the white balance mode.
ⓒ	Indicates the shutter speed.
ⓓ	Indicates the auto focusing zone.
ⓔ	• Lights when the focus function has been set to manual. • Blinks when the auto focus function may not work correctly due to low light or low contrast. See page 38.
ⓕ	Indicates the playback mode (LP).
ⓖ	In the VTR operation mode, this indicates the tape transport function.
ⓗ	Indicates the tape counter.
ⓘ ZERO MEM	Blinks when the ZERO MEM button has been pressed.
ⓙ	Indicates the date or time.
ⓚ	• Lights in red during recording. • Blinks when the battery is weak.

F-7



Easy Camera Recording with Automatic Adjustment

Instant Playback on the Spot F-7

You can monitor the picture just recorded on the viewfinder screen.

1 While pressing the small button, set the POWER switch to CAMERA.
2 Slide the STANDBY switch up.
3 Keep pressing the "–" side of the EDITSEARCH button to view the playback picture in reverse.
4 Keep pressing the "+" side of the EDITSEARCH button to view the playback picture.

During Recording, to Record Again on the Previous Recorded Portion (Editsearch 1)

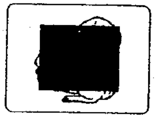
1 Slide the STANDBY switch up.
2 Monitor the picture on the viewfinder screen and locate the point from which the recording is to begin again with the EDITSEARCH button.
Keep pressing the "+" side of the EDITSEARCH button to advance the picture at a normal playback speed, or the "–" side to reverse the picture.
3 At the desired point, release the EDITSEARCH button.
The unit will be set to recording pause mode.
4 Press the START/STOP button to start recording.

Smooth recording can be made even if the recording is stopped and started again, or even if the power is turned off and on again, provided that the cassette is not removed. But, if the cassette has been removed, proceed as above.

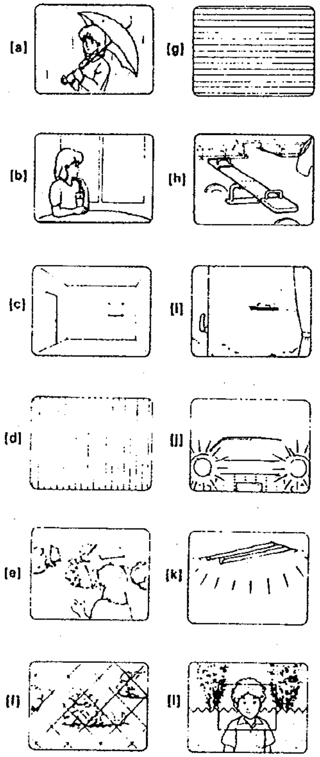
To monitor the sound while viewing the playback picture on the viewfinder screen
Connect an earphone to the ⓢ jack.
1 While pressing the small button, set the POWER switch to VTR.
2 Press the ◀◀ button to rewind the tape.
3 Press the ☐ button to stop the tape.
4 Press the ▷ button to start playback.

To stop the playback, press the ☐ button.

G-1



G-2



Manual Focusing

When the AUTO LOCK cover is closed, correct focusing is obtained in most cases if the subject is displayed in the auto focusing zone (illustrated in blue). G-1
Use manual focusing when shooting subjects difficult to focus automatically.

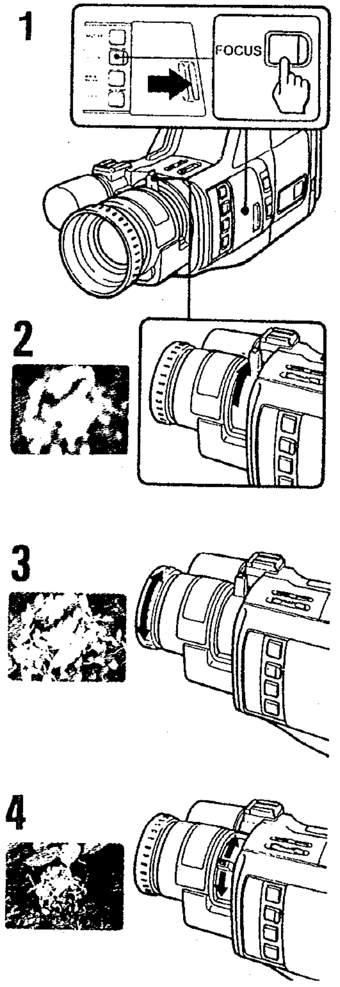
Poor Conditions for Auto Focusing G-2

- [a] Insufficient light
- [b] Too much bright light behind the subject
- [c] Subjects with flat colors and less contrast — wall, sky, etc.
- [d] Finely detailed repetitive patterns
- [e] When the distance between subjects at the center is extreme (e.g. one subject is close, the other is away)
- [f] Subjects beyond screens, nets, etc. or when another subject passes across the camera
- [g] Horizontal stripes
- [h] Diagonal object
- [i] When there is frosted glass between the shooting object and the recorder
- [j] Bright object or object reflecting light
- [k] When shooting under a fluorescent lamp at the shutter speed set to 1/250, 1/1000, 1/2000 or 1/4000
- [l] When there is a high contrast background within the auto focusing zone (The back ground may be focused.)

Other Uses of Manual Focusing

- When the white mark inside the viewfinder blinks
- When using special effects lenses or filters
- When shooting still subjects on a tripod
- To save battery wear
  (As long as the AUTO LOCK cover is closed, the auto focusing operates and the focus ring moves automatically even in the recording pause mode. This causes the battery to wear continuously.)
- For focusing in close-up shooting, see page 54.

G-3



Notes
Since the auto focusing system of this unit detects the contrast of the video signal for accurate focusing, it does not function momentarily in these cases:

- When the shutter speed or the white balance is changed
- When the back light is being adjusted
- When lighting conditions change quickly
- When the zooming is changed from wide-angle to telephoto

It may take several seconds to get focus when the camera is rapidly panned from a distant subject to a near subject with less contrast. In this case, adjust the focus manually.

Note on automatic adjustment
During recording with auto focusing, do not turn or stop the focus ring forcibly.

To Focus Manually G-3

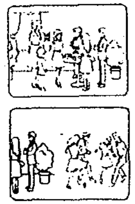
1. Slide open the AUTO LOCK cover and press the FOCUS button.
   The white mark (■) will be shown in the viewfinder.
2. Turn the manual zoom lever to the telephoto position (68) to make the subject as large as possible in the viewfinder.
3. Turn the lens hood (focus ring) to achieve sharp focus.
4. Set the desired shot length using the manual zoom lever.

Some helpful hints

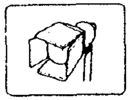
- When shooting a scene with lots of movement in bright light, the subject can be kept in good focus by setting the zoom lever to the wide-angle position and the focus ring to 2 m, regardless of the distance between the subject and the recorder.
- When shooting in low light situations such as indoors, the depth of field in proper focus is very shallow. For best results, shoot at wide angles, after focusing in telephoto.
- The figures on the focus ring indicate the distance between the subject and the ⊖ mark.
- Recommended illumination of this unit is more than 300 lux (28 footcandles). If shooting is done indoors or under other circumstances where light is insufficient, video lights must be used for best results. Under adequate light condition, the depth of field in proper focus is wider and a sharper picture will be recorded.

H

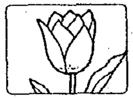
[a]



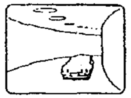
[b]



[c]



[d]



[e]

[f]

Manual White Balance Adjustment

When the AUTO LOCK cover is closed, the auto white balance function of this unit operates automatically in most cases. However, if it does not work correctly in the conditions listed below, adjust the white balance manually.

Difficult Conditions for Auto White Balance H

	Recording Condition	Indication in the Viewfinder
[a]	When lighting conditions change quickly	☼
[b]	When the light source for the subject is different from that illuminating this unit, such as when the subject is in a spotlight, etc.	☼
[c]	When shooting a mono-chromatic subject or the background is monochromatic	HOLD
[d]	When recording under a sodium lamp	☼
	When recording under a mercury lamp	☼
	When recording under a color matching fluorescent lamp	☀
[e]	When recording outdoors, such as a night view, neon sign or fireworks	☀
[f]	When recording outdoors, such as scenes after sunset or scenes before sunrise.	☀

To Adjust the White Balance Manually

1 While pressing the small button, set the POWER switch to CAMERA.
2 Slide open the AUTO LOCK cover.
3 Select the desired white balance mode by pressing the WHITE BAL button.
Each push of the WHITE BAL button cyclically changes the indication inside the viewfinder.

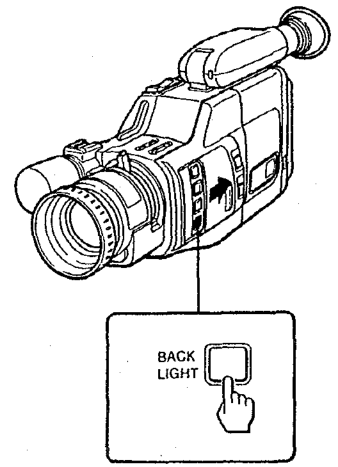
No indication (Auto) → HOLD → ☀ → ☼ → No indication (Auto)

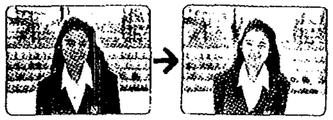
For the color temperature and the white balance adjustment, see page 92.

To adjust the white balance precisely
1 Set the WHITE BAL button to auto mode (no indication).
2 Point the recorder to a white, flat object such as a white wall, paper, etc.
3 Press the WHITE BAL button to indicate the HOLD mark inside the viewfinder.
The correct white balance is memorized.

Notes
- When the power is turned off or the light source is changed, reset the HOLD mode again.
- The white balance is related to back light and shutter speed adjustment. When the shutter speed has been adjusted manually with the AUTO LOCK cover opened, and then if the recorder is moved from indoors to outdoors, or vice versa, close the AUTO LOCK cover and open it again.
- When using the recorder in the automatic adjustment mode with the AUTO LOCK cover closed, and then moving from indoors to outdoors, or vice versa, slide the STANDBY switch up and point the recorder to a white object for about 10 seconds so that the white balance is adjusted properly.

I





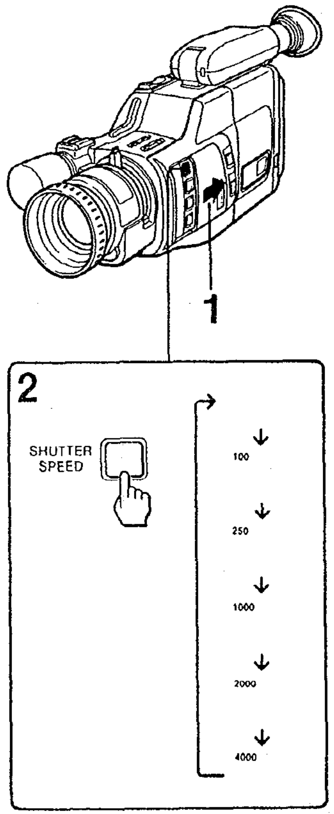
Back Light Adjustment

This unit adjusts the iris automatically. However, when shooting a subject that is backlit, slide open the AUTO LOCK cover, and press the BACK LIGHT button.
The ▨ indication appears on the viewfinder screen.

After shooting that particular scene, be sure to press the BACK LIGHT button again to release it. Otherwise the recorded picture will be too bright.

Note
The function will be released once the POWER switch is set to OFF.

J



Shutter Speed Adjustment

When a fast-moving subject is recorded at a normal shutter speed, the picture may not be seen clearly when played back. This can be improved by increasing the shutter speed.
The shutter speed of this unit can be selected from six speeds, 1/60 (normal speed), 1/100, 1/250, 1/1000, 1/2000 or 1/4000 second.
However, when the shutter moves fast, it will not allow enough light to come into the lens, so the picture will be dark. Therefore, when recording at a high shutter speed, record in a brighter place than usual.
Choose an appropriate shutter speed according to the place and situation.
See the chart below for examples.

Example use	Recommended shutter speed
• On clear days, recording golf or tennis scenes (To view the hit ball clearly in the pause mode, set to 1/4000) • Recording the skiers	1/4000 or 1/2000
• On overcast days, recording a moving merry-go-round or jet-coaster • Recording outdoors from inside a vehicle (for stable shooting)	1/1000 or 1/250
• Instead of the ND2 filter (To reduce the exposure level to approx. 1/2) • Recording indoors (for stable shooting)	1/100

J

1 Slide open the AUTO LOCK cover.
2 Press the SHUTTER SPEED button repeatedly until the desired shutter speed indication appears on the viewfinder screen. Each time the SHUTTER SPEED button is pressed, the indication changes:
No
indication → 100 → 250 → 1000 → 2000 → 4000
(1/60) (1/100)(1/250)(1/1000)(1/2000)(1/4000)

Auto focus will not function when a shutter speed other than the normal speed and 1/100 is selected under a fluorescent lamp.
When shooting, use manual focusing.

Shutter Speed Adjustment

Notes

- A ghost image will appear in still picture mode of this unit. To view a clear still or slow picture, use another video cassette deck with the clean still/slow function.
- When shutter speed 1/250 or faster is selected, recording must be done under sunlight or video light.
- When the shutter speed is changed during a camera recording of a TV screen, the brightness of the recorded picture may vary.
- When a very bright object is shot at a faster shutter speed, a light, vertical, belt-like line ("smear") may appear on the screen.
- When the recording is done under a light discharged tube, such as a fluorescent lamp, sodium lamp, or mercury lamp, in 50 Hz areas the brightness of the recorded picture may vary ("flicker").

Zooming

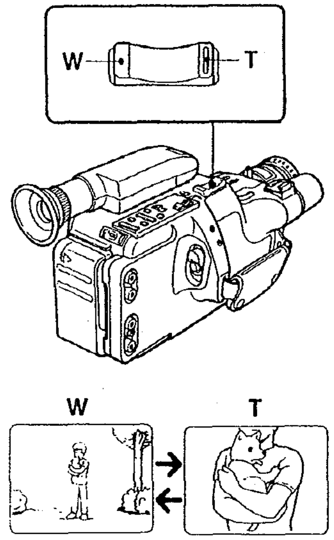
The size of the subject in the scene can be changed.

Power Zoom K-1

— for smooth and constant zooming

Press the T side of the power zoom button for telephoto and the W side for wide-angle.
The zoom ring will move automatically.

K-1



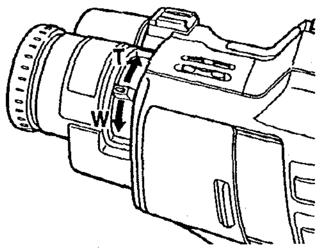
Manual Zoom K-2

— to create a dramatic effect

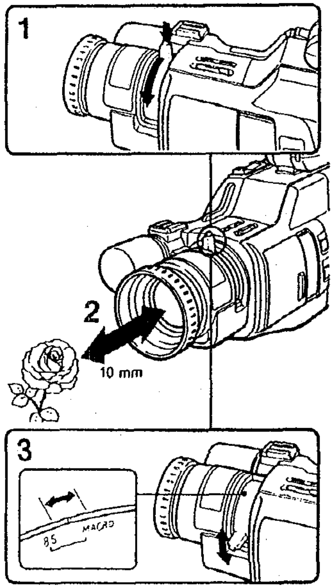
Turn the manual zoom lever upward for telephoto and downward for wide-angle.

For more zooming effect
The focal length of this unit is 8.5 mm to 68 mm. Converted into the focal length of a 35 mm camera, this means approximately f-45 mm to 363 mm.

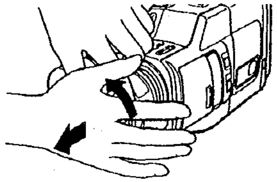
K-2



L-1



L-2



Close-ups (Macro)

Even tiny objects can literally fill the screen for dramatic close-up effects.
Remove the lens hood before operation.

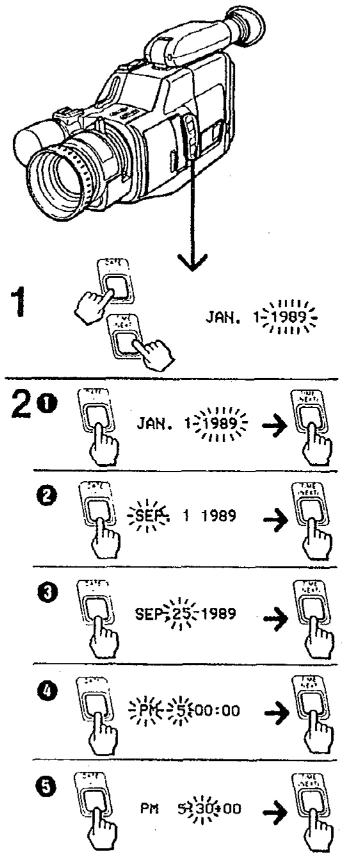
L-1

1 Turn the zoom lever to the MACRO position, pressing the macro set button.
2 Bring the recorder as close as necessary to obtain the desired subject size.
The subject can be as close as approximately 10 mm ($^7/_{16}$ in.) from the lens surface.
3 Turn the zoom lever within the MACRO range to focus sharply. (The power zoom button can be used instead of the zoom lever.)

To remove the lens hood L-2
The lens hood also functions as focus ring.
To remove the lens hood, set the POWER switch to OFF and turn the hood counterclockwise with the palm of your hand.

Notes
- Auto focusing does not function in macro shooting.
- If the subject is closer than 10 mm from the lens, it cannot be brought into focus.
- When shooting in macro, the depth of field is very shallow, so pay attention to focus. To keep the subject in focus, use a tripod or monopod.
- Zooming cannot be used in macro shooting when the zoom lever is in the MACRO range. To change the subject size in the scene, move the recorder.

M-1



Recording Date or Time

Once the date and the current time are adjusted, the date or time can be recorded together with the picture.

- Make sure that the fully-charged battery pack and lithium battery are installed.
- Set the POWER switch to CAMERA, and slide the STANDBY switch up.

To Set Date and Time M-1

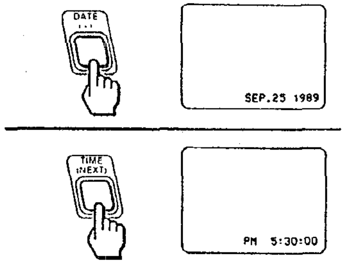
1 Press the DATE and TIME buttons **simultaneously for more than 3 seconds.**
The date indication will appear in the viewfinder (date/time setting mode).
The DATE button now functions as the + button and the TIME button functions as the NEXT button.
2 Adjust the ❶ year, ❷ month, ❸ day, ❹ hour and ❺ minute in sequence, following the illustration.
First adjust the blinking digits with the + button, and then press the NEXT button.
After adjusting the minute digits, press the NEXT button at the same time with an announced time signal.

The clock starts operating. There is no need to readjust the date and time as long as the lithium battery remains.

To clear the time indication from the display
Press the TIME (NEXT) button again.

The + button can be pressed in two ways
- When you keep the button pressed, the digits will advance continuously.
- When you press and immediately release the button, the digits will advance by one.

M-2



Recording Date or Time

To check the preset date and time
Press the DATE or TIME button in the recording pause mode. When the same button is pressed again, the indication goes off.

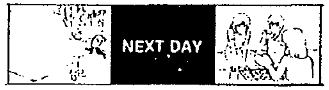
To readjust an incorrect date or time
Set the unit to date/time setting mode and press the NEXT button repeatedly until the incorrect digit blinks. Correct it with the + button and press the NEXT button. After adjusting the minute digits, press the NEXT button at the same time with an announced time signal.

To Record the Date or Time M-2

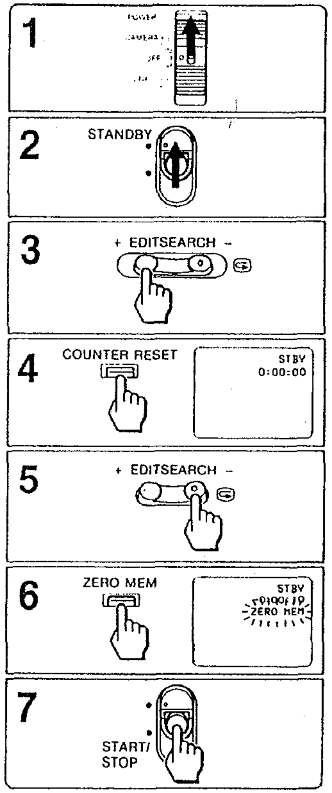
During camera recording or in recording pause mode, press the DATE or TIME button to display the date or time on the viewfinder screen.
The date or time being displayed will be recorded together with the picture.

To stop recording the date or time
Press the DATE or TIME button again. The picture recording will continue.

N-1



N-2



Editsearch 2

You can insert (record) video and audio simultaneously from the camera onto any recorded tape. N-1

Operation N-2

Monitor the picture being inserted on the viewfinder screen.

1 While pressing the small button, set the POWER switch to CAMERA.
2 Slide the STANDBY switch up to set the unit to recording pause mode.
3 Keep pressing the "+" or "−" side of the EDITSEARCH button and release the button at the point where the insert should end. The unit will be set to recording pause mode.
4 Display the counter in the display window and press the COUNTER RESET button. The counter is reset to zero. (For an accurate ending point, press the COUNTER RESET button immediately after the EDITSEARCH button is released and while the still picture is displayed.)
5 Keep pressing the "−" side of the EDITSEARCH button and release the button at the point where the insert should begin.
6 Press the ZERO MEM button. The insert ending point is stored in memory.
7 Press the START/STOP button. Insert recording will begin.

The insert recording will stop automatically near the counter zero point.

To cancel ZERO MEM mode
Press the ZERO MEM button so that the ZERO MEM indicator disappears.

To change the insert ending point
Press the ZERO MEM button to turn off the ZERO MEM indicator and repeat steps 3 through 6 above.

To insert the date or time
Follow steps 1 through 6 above, press the DATE or TIME button to display the date or time indication on the viewfinder screen and then press the START/STOP button.

Editsearch 2

Notes on ZERO MEM mode
ZERO MEM mode is cancelled automatically in the following cases.

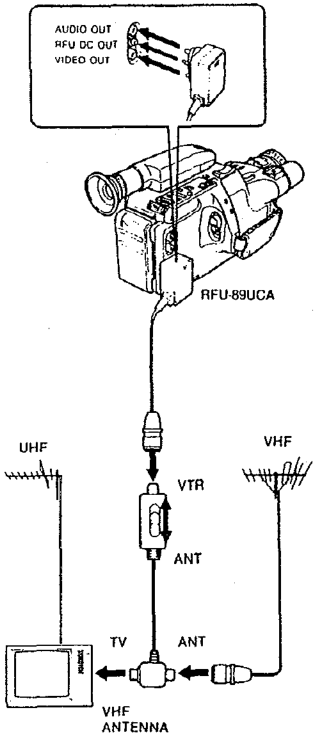
- When an insert recording is completed.
- When the position of the POWER switch is changed.
- When the power is turned off.
- When the cassette is ejected.

To restore it, press the ZERO MEM button again.

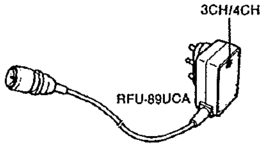
Notes

- When recording pause mode lasts for approximately 5 minutes, pause mode will be automatically released and the unit will be turned off.
- When the inserted tape is played back, the picture may be distorted at the end of the inserted program.

O-1



O-2



Recorder Operation

Preparation for Playback

When a VCR has been connected to the TV, refer to the pages 74, 76 and 78.

Connecting a TV

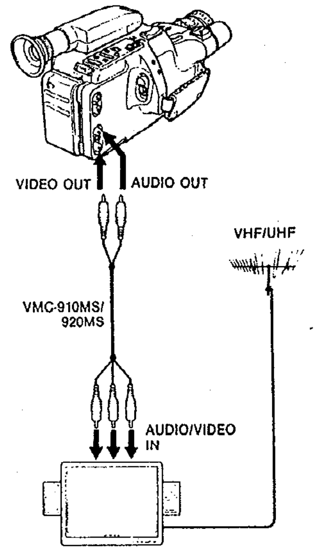
Connecting a TV without audio/video input connectors O-1

1 Connect the RFU adaptor to this unit.
2 Connect the VHF antenna, this unit and TV to the antenna selector (supplied with the RFU-89UCA).
Use a 75-ohm coaxial cable for antenna connection.
3 Set the selector switch on the antenna selector as follows:

For viewing a playback picture → VTR
For viewing TV programs → ANT

On the TV channel for the video camera recorder O-2
Whenever you view the playback picture, set the channel selector of the RFU adaptor to either VHF channel 3 CH or 4 CH and select the same channel on the TV.

O-3



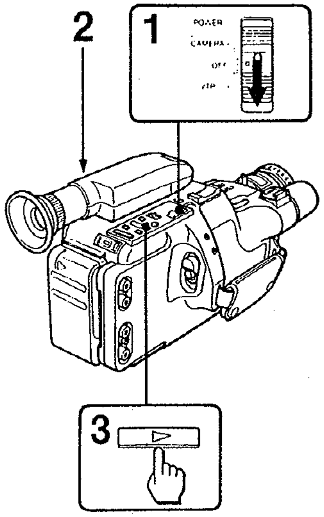
Preparation for Playback

Connecting a TV (or color monitor) equipped with andio/video input connectors O-3

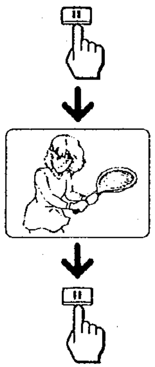
1 Connect this unit to the TV using the optional VMC-910MS/920MS audio/video cable.
2 Set the TV/VIDEO selector button on the TV as follows:

For viewing a playback picture → VIDEO
For viewing TV programs → TV

P-1



P-2



Playback

Turn on the TV (or color monitor), and select the channel for viewing a playback picture (or set the TV/VIDEO selector to VIDEO)

P-1
1 While pressing the small button, set the POWER switch to VTR.
2 Insert a cassette.
3 Press the ▷ button.
Playback will start.

To stop the tape, press the ☐ button.

After using, be sure to set the POWER switch on the recorder to OFF

To view a still picture P-2
Press the ❙❙ button during playback. To resume playback, press the ❙❙ button again or press the ▷ button.

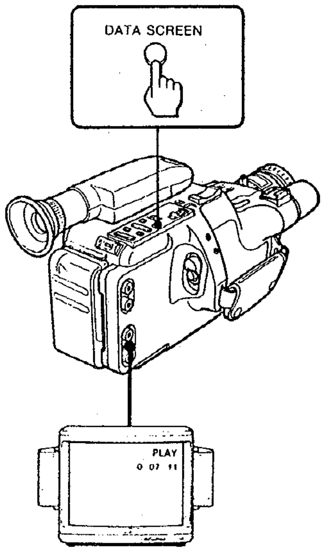
Monitoring a High-Speed Picture

During playback — Picture search
1 In the playback mode, press the ▶▶ or ◀◀ button.
The picture will be monitored at high speed as long as it is kept pressed.
2 Release the ▶▶ or ◀◀ button at the desired point.
Normal playback will resume.

During fast-forward or rewind — Skip scan
1 Press the ▶▶ button in fast-forward mode or press the ◀◀ button in rewind mode.
The picture is displayed while the button is kept pressed.
2 Release the ▶▶ or ◀◀ button to resume normal fast-forward or rewind mode.
3 Press the ▷ button to play back.

Notes
- If you move the position of the POWER switch during playback, the tape will stop. When you move the POWER switch to CAMERA in the playback pause mode, however, the unit will enter recording pause mode.
- When the pause mode lasts for 5 minutes or more, the unit will automatically enter the stop mode.
- Streaks will appear and the sound will be muted in the high-speed picture.

Q



Playback

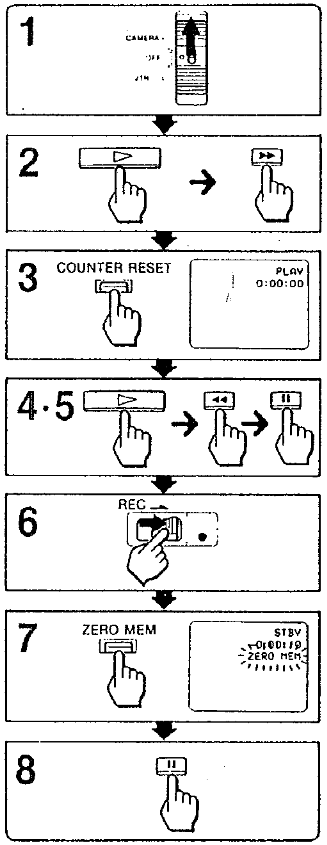
To Display the Indication on the Viewfinder Screen on the TV Q

Press the DATA SCREEN button.
The indication on the viewfinder screen is superimposed on the TV program.
It is convenient to check the indication on the TV screen when the playback picture is viewed on the TV or when the video camera recorder is operated from a distance using the Remote Commander.

To clear the indication, press the DATA SCREEN button again.

Note
To edit from this unit to another VCR, clear the indication on the TV or the indication will be recorded with the picture.

S



Insert Recording

To Insert a TV Program or a Picture from Another VCR S

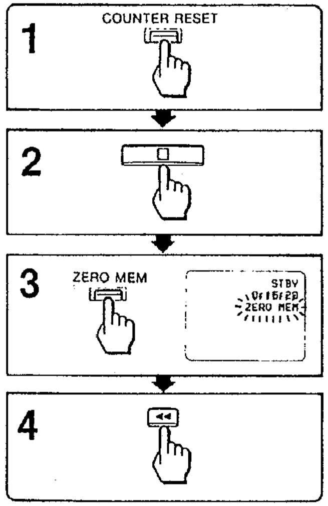
Monitor the picture being inserted on the viewfinder screen.

1 While pressing the small button, set the POWER switch to VTR.
2 Locate the point on the tape where the insert should end by pressing the ▶▶ or ◀◀ button during playback.
3 Display the counter in the display window and press the COUNTER RESET button. The counter is reset to zero.
4 Press the ◀◀ button during playback to rewind the tape a little further than the point where the insert should begin.
5 Release the ◀◀ button to resume playback and press the II button at the insert starting point.
6 Slide the ● REC switch in the arrow direction to set the unit to recording pause mode.
7 Press the ZERO MEM button. The insert ending point is stored in memory.
8 To start recording, press the II button.

The insert recording will stop automatically near the counter zero point.

To cancel ZERO MEM mode
Press the ZERO MEM button so that the ZERO MEM indicator disappears.

T



Use of the Tape Counter

During recording or playback, the digits on the counter indicate the actual recording or playback time.

To Index the Whole Tape

Press the COUNTER RESET button at the beginning of the tape so that the counter shows "0:00:00". By noting the counter reading at a particular point, you can easily find that point later by referring to the tape counter.

Notes
- The counter reading and the point of the tape may not correspond exactly. Use the counter as a guide.
- The counter does not operate for a blank, unrecorded portion of a tape.
- There will be a time lag of several seconds on the counter reading after repeated fast-forward and rewind operations.
- There will be also a time lag of several seconds when the tape recorded in LP and SP modes mixed or the tape having a blank portion between the recorded portions in played back.

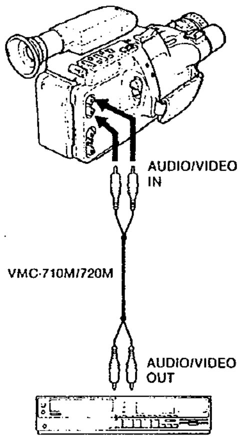
To Return to a Pre-registered Point T

1 During recording or playback, press the COUNTER RESET button at the point you later want to locate.
2 Press the □ button when the recording or playback has finished.
3 Press the ZERO MEM button. The "ZERO MEM" indicator will blink in the display window.
4 Press the ◀◀ or ▶▶ button.
The tape will be rewound or sent forward and stop automatically when the counter reaches approximately zero.

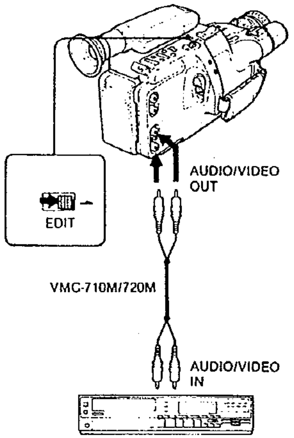
To cancel ZERO MEM mode
Press the ZERO MEM button so that the ZERO MEM indicator disappears.

Notes
- The ZERO MEM button does not function during recording or playback mode.
Be sure to press the ZERO MEM button when the tape is stopped.
- The ZERO MEM mode is cancelled automatically once the tape is rewound or sent forward to zero.

U-1



U-2



Tape Editing

To edit a home movie tape, you will need another VCR or another video camera recorder.

To Edit from Another VCR to this Unit U-1

1 While pressing the small button, set the POWER switch on this unit to VTR and turn on the other VCR.
2 Start playback on another VCR.
3 Slide the ● REC switch on this unit.

To Edit from this Unit to Another VCR U-2

1 While pressing the small button, set the POWER switch on this unit to VTR and turn on the other VCR.
2 Slide the EDIT switch on this unit in the direction of the arrow (ON).
3 Set the input selector on the VCR to LINE.
4 Press the II button on this unit during playback at the point where you want to start recording.
5 Press the record button on the other VCR, pressing the II button.
6 Release the II buttons on both units. Recording will start.

When the VCR to be used is a stereo type, use the VMC-910MS/920MS connecting cord.

After editing, turn off both units and be sure to slide the EDIT switch in the reversed direction to the arrow (OFF).

To cut off an unnecessary portion
Press the II button on the recorder at the beginning of the unnecessary portion.
Release it where you want to resume recording.

Function of the EDIT switch
Slide this switch in the direction of the arrow (ON) whenever you edit tapes. Signal loss that results from tape-to-tape transfer will be reduced, achieving more accurate signal transfer.
When recording or playing back normally, keep this switch in the reversed direction to the arrow (OFF).

Precautions for using lights

Do not point the light at the recorder body. Instead, make sure that it is pointed parallel to the camera or away from it. Be especially careful with lights attached to the accessory shoe. The high heat from the lights pointed at the camera body can warp the cabinet.

For detailed instructions on proper use of lights, carefully read the instruction manuals that accompany them.

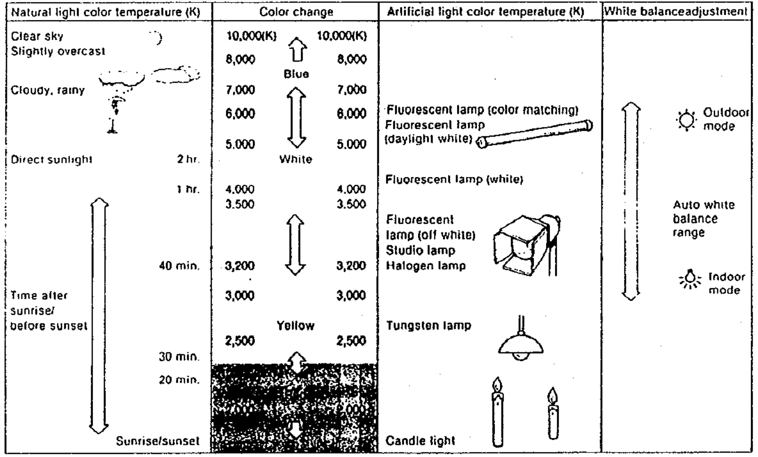
Brightness Levels

The single greatest influence on picture quality is the brightness level. Using the following chart as a reference, take a few minutes to familiarize yourself with brightness levels to improve your recording.

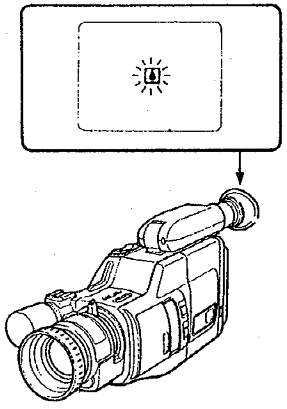
ND filter required	Unit: lux	Snow-covered mountains Snow fields Sandy beach, clear day in summer
Normal recording	100,000	Clear day, mid-day (100,000) Clear day, mid-afternoon (35,000) Overcast day, mid-day (32,000)
	10,000	Overcast day, one hour after sunrise (2,000)
	1,000	Office lit by fluorescent lamps, near window (1,000) Clear day, one hour before sunset (1,000) Department store counter (500 – 700)
	500	Station wicket (650) Office lit by fluorescent lamps (400 – 500) Room lit by two 30 W fluorescent lamps (300)
Video light recom-mended	300	Subway station platform (300)
	100	Arcade at night (150 - 200)
Video light required		Theater lobby (15 – 35) Candle light (10 – 15)
	10	

Color temperature — how it effects white balance adjustment

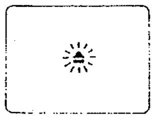
If the temperature of an object continues to increase, it will eventually begin giving off light. At this time, there is a fixed relationship between the object's temperature and its "light color." The temperature of the object radiating the light is expressed in absolute temperature (K). This is also known as the color temperature, which in turn stands for "light color." As color temperature increases, the light color changes from red to yellow to white to blue.



W-1



W-2



Notes on Moisture Condensation

If the unit is brought directly from a cold to a warm location, moisture may condense inside the unit, on the surface or the tape or on the lens. In this condition, the tape may adhere to the head drum and be damaged or the unit may not operate correctly. To prevent possible damage under these circumstances, the unit is furnished with moisture sensors.

Moisture is present inside the unit when: W-1

- The ▣ indicator blinks inside the viewfinder.

No function except for cassette ejection will work.

⬇

Eject the cassette if present, and turn off the unit and leave it with the cassette holder open at least for one hour.

⬇

The unit can be used again if the ▣ indicator does not appear when the power is turned on again.

If moisture is present on the surface of the tape W-2

When the tape is inserted and a tape transport button is pressed, the ⏏ indicator blinks inside the viewfiner. No function except for cassette ejection willl work.

⬇

Eject the cassette and let the unit and the cassette sit at least for one hour.
The cassette can be used again if the ⏏ indicator does not appear when the cassette is inserted and a tape transport button is pressed.

If moisture condensation occurs on the lens
There are no caution indicators, but the lens becomes dim. Turn off the power and leave the unit unused at least for one hour.

Using Your Recorder Abroad

Each country has special TV color broadcast and electricity systems. Before using your recorder abroad, check the following points.

Differences in color systems
If you prepare fully charged battery packs and the AC power adaptor which can be used in all areas with the local power supply of 100V–240V, you can use your recorder in any country. You can monitor the playback picture on the viewfinder screen. However, to monitor the playback picture on a TV, the TV must be based on the NTSC system and have the video/audio inputs.

NTSC system countries
Bahama Islands, Canada, Central America, Japan, Korea, Mexico, Taiwan, the Phillipines, U.S.A., etc.

PAL system countries
Australia, Austria, Belgium, China, Denmark, Finland, Great Britain, Holland, Hong Kong, Italy, Kuwait, New Zealand, Norway, Portugal, Singapore, Spain, Sweden, Switzerland, Thailand, West Germany, etc.

SECAM system countries
Bulgaria, France, Hungary, Iran, Iraq, Monaco, Poland, the Soviet Union, etc.

Using Your Recorder Abroad

Differences in cassette tapes
There are two formats for 8 mm video recording, NTSC and PAL. Video cassette tapes are made to correspond to the respective formats. Use NTSC format cassette tape for the CCD-F45. You will find "P6" on the package of the cassette. In some countries, however, only PAL format cassette tape with "P5" on the package is available. In this case, the standard recording times stipulated on the cassette are different from the actual recording time.
For your reference to the recording times of NTSC and PAL format cassettes, see below.

NTSC cassette

Cassette	Recording time
	SP mode
P6-15	15 min.
P6-30	30 min.
P6-60	60 min.
P6-90	90 min.
P6-120	120 min.

PAL cassette

Cassette	Recording time
	SP mode
P5-15	22 min.
P5-30	43 min.
P5-60	84 min.
P5-90	126 min.

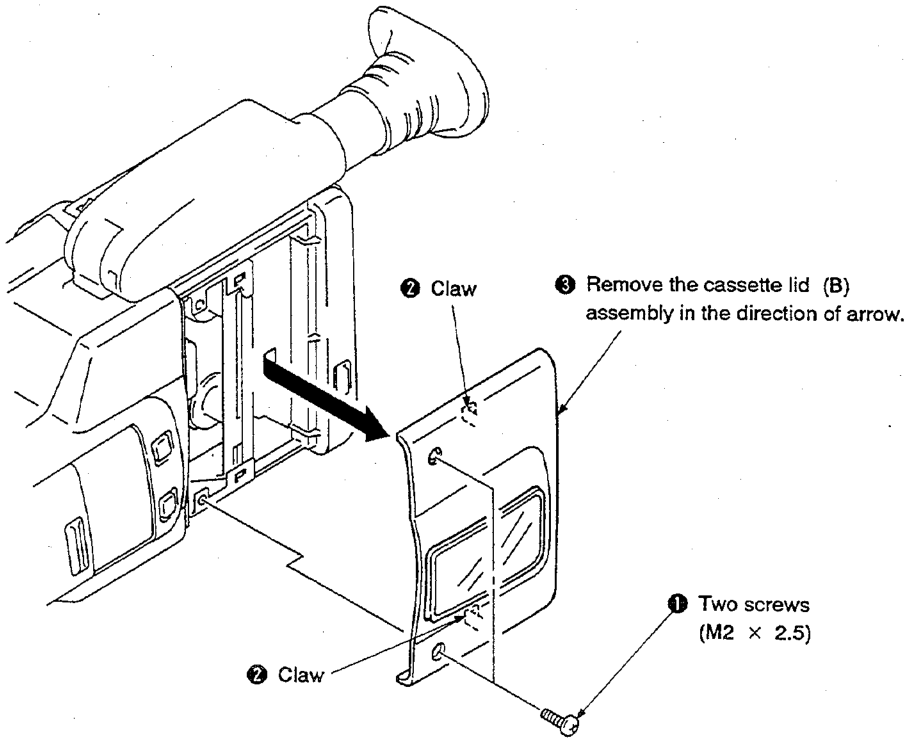
Trouble Indicators

○ when the indicator appears ☐ slow blinking ☐ fast blinking

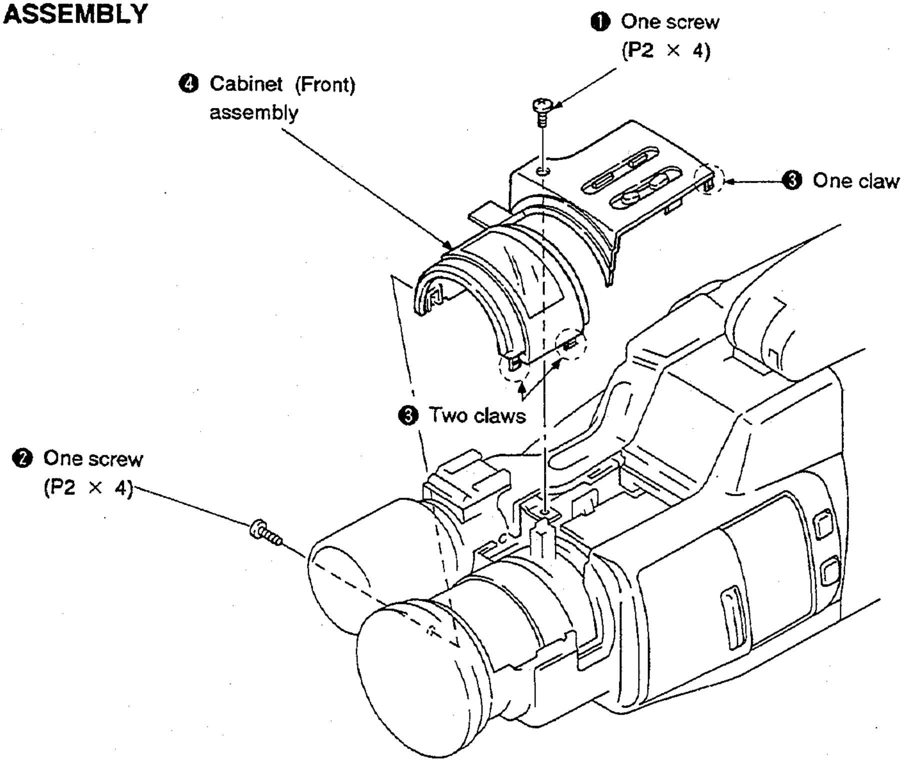
	Position of the POWER switch		Indicator	
Cause	VTR	CAMERA	Indicator to be shown inside the viewfinder	Camera recording/ battery lamp
The battery is fully exhausted.	○	○	🪫	
The battery is weak.	○	○	🪫	
The tape is at its end.		○	📼 ⏏	
No cassette is inserted.		○	📼	
The tab on the cassette is out.		○	📼 ⏏	
Moisture has condensed inside the unit.	○	○	💧 ⏏	
The gap of the head is clogged.	○	○	⊗	
Other troubles	○	○	⏏	
The lithium battery is fully exhausted		○	AM12:00:00 (5 seconds) ⇩ JAN. 1 1989 AM12:00:00	
The lithium battery is weak		○	Time (5 seconds) ⇩ Normal indication for the operation	

SECTION 2
DISASSEMBLY

2-1. REMOVAL OF CASSETTE LID (B) ASSEMBLY

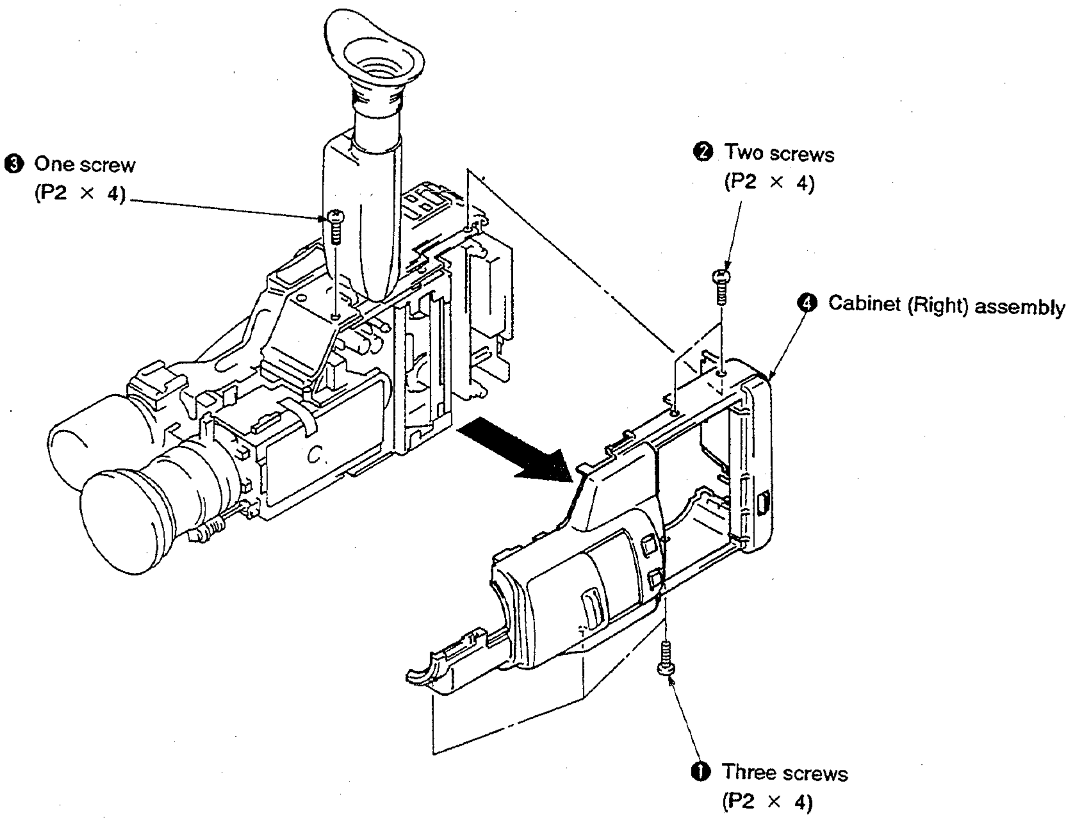

❷ Claw
❸ Remove the cassette lid (B) assembly in the direction of arrow.
❶ Two screws (M2 × 2.5)
❷ Claw

2-2. REMOVAL OF CABINET (FRONT) ASSEMBLY

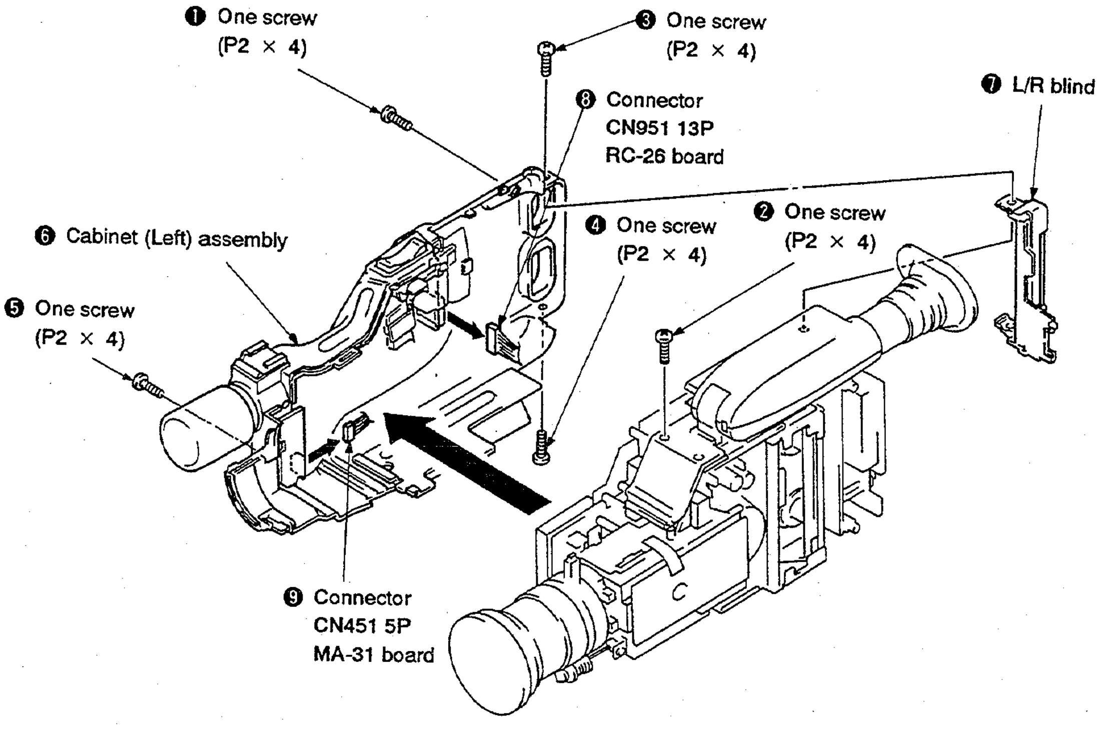

❶ One screw (P2 × 4)
❹ Cabinet (Front) assembly
❸ One claw
❸ Two claws
❷ One screw (P2 × 4)

2-3. REMOVAL OF CABINET (RIGHT) ASSEMBLY

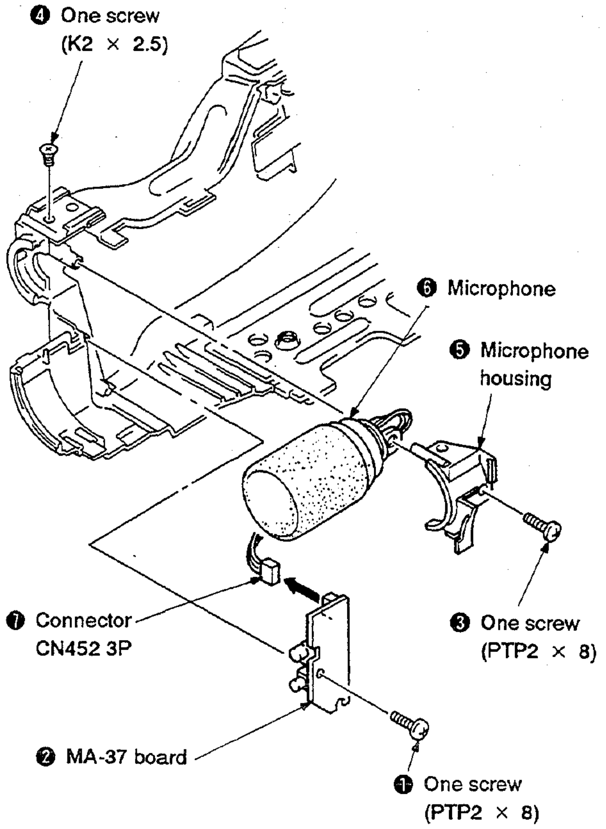
Note: Perform this servicing with EVF raise as the figure below.


❸ One screw
(P2 × 4)
❷ Two screws
(P2 × 4)
❹ Cabinet (Right) assembly
❶ Three screws
(P2 × 4)

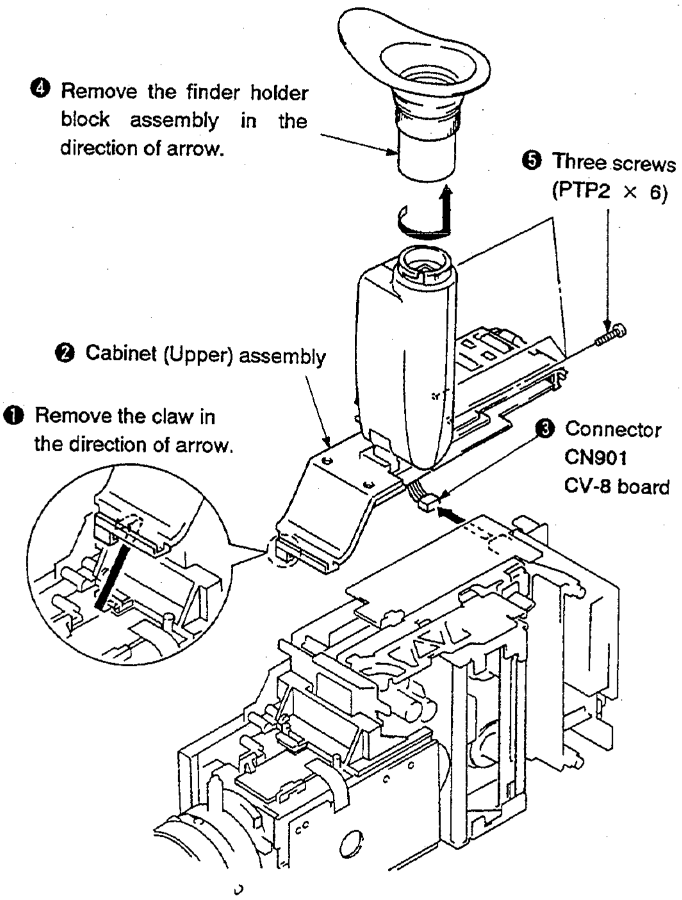
2-4. REMOVAL OF CABINET (LEFT) ASSEMBLY

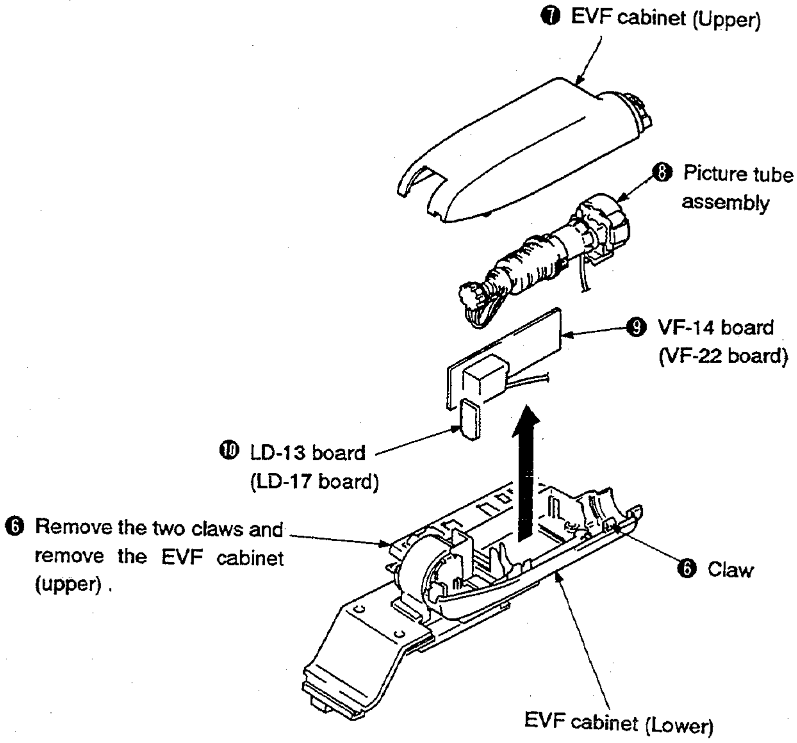

❶ One screw
(P2 × 4)
❸ One screw
(P2 × 4)
❽ Connector
CN951 13P
RC-26 board
❼ L/R blind
❻ Cabinet (Left) assembly
❹ One screw
(P2 × 4)
❷ One screw
(P2 × 4)
❺ One screw
(P2 × 4)
❾ Connector
CN451 5P
MA-31 board

2-5. REMOVAL OF MICROPHONE

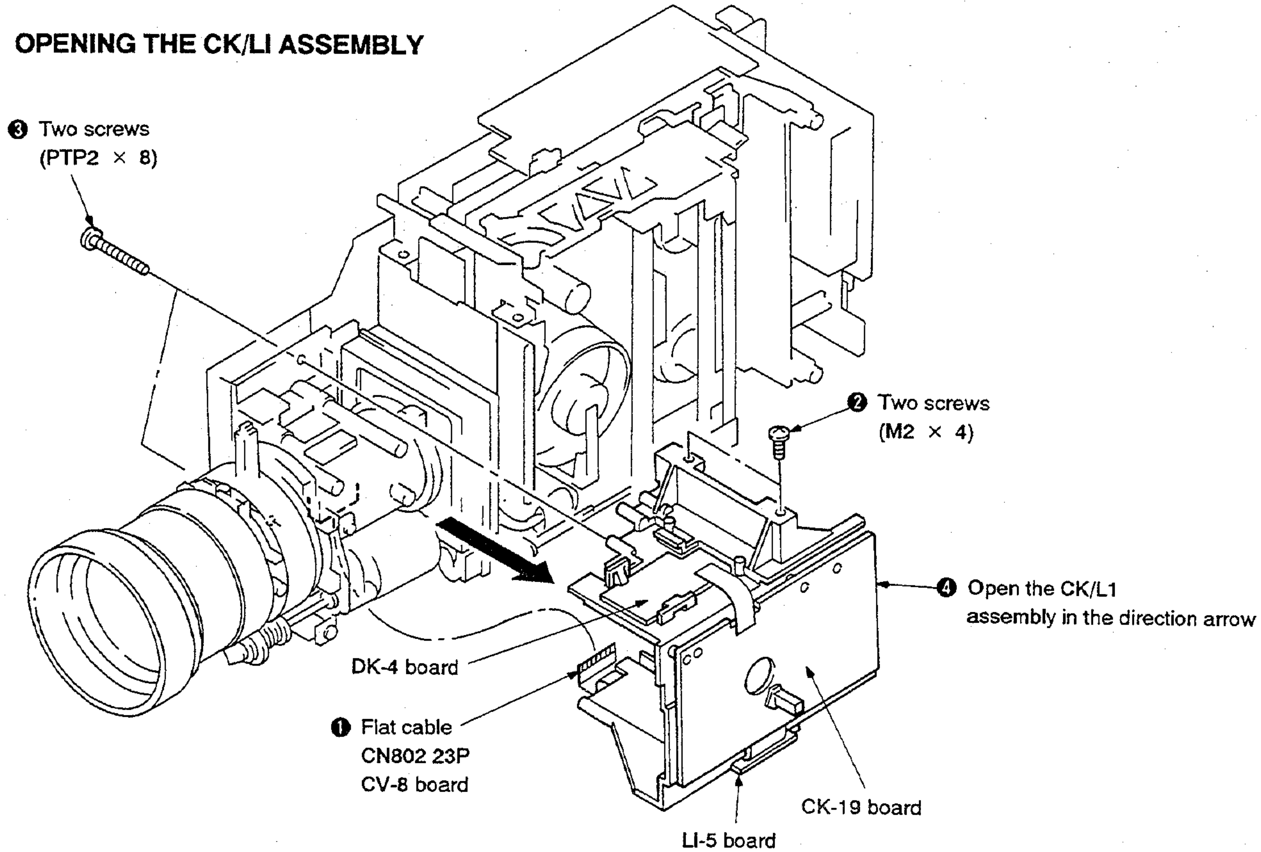

❹ One screw
(K2 × 2.5)
❻ Microphone
❺ Microphone housing
❼ Connector CN452 3P
❸ One screw
(PTP2 × 8)
❷ MA-37 board
❶ One screw
(PTP2 × 8)

2-6. REMOVAL OF CABINET (UPPER) ASSEMBLY AND EVF

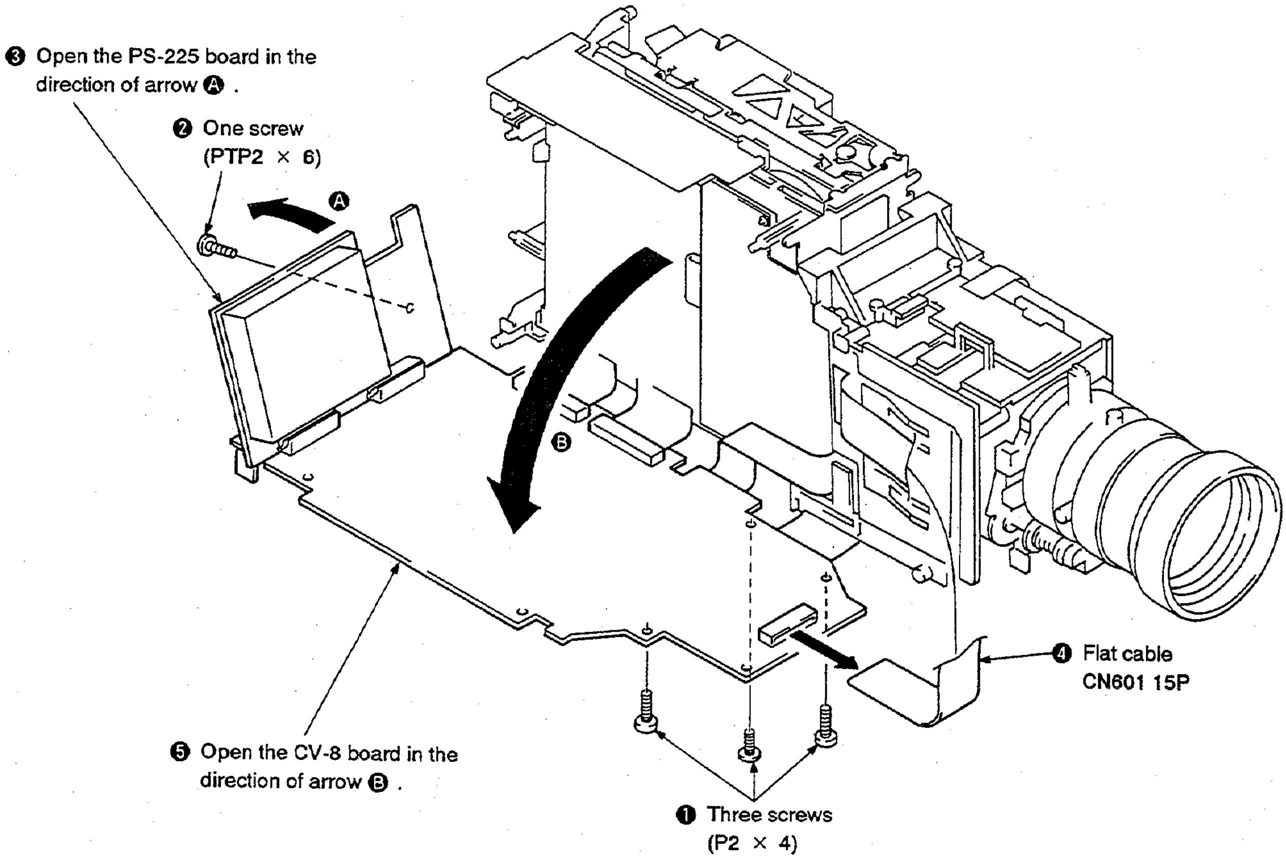

❹ Remove the finder holder block assembly in the direction of arrow.
❺ Three screws
(PTP2 × 6)
❷ Cabinet (Upper) assembly
❶ Remove the claw in the direction of arrow.
❸ Connector
CN901
CV-8 board


❼ EVF cabinet (Upper)
❽ Picture tube assembly
❾ VF-14 board
(VF-22 board)
❿ LD-13 board
(LD-17 board)
❻ Remove the two claws and remove the EVF cabinet (upper).
❻ Claw
EVF cabinet (Lower)

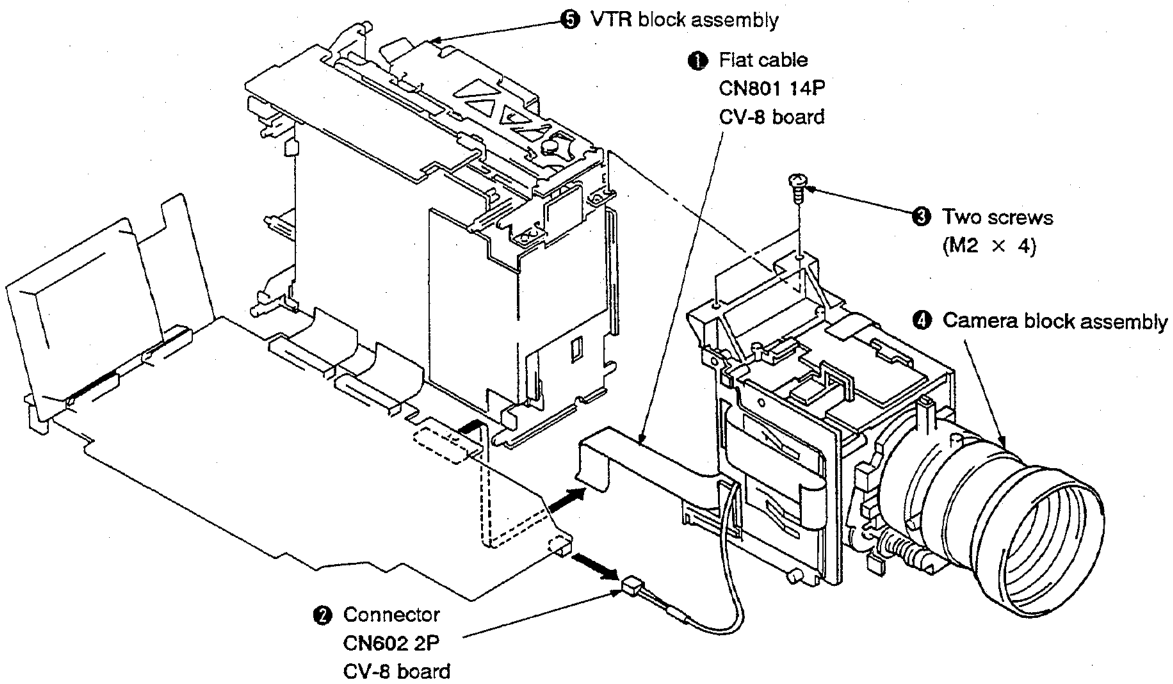
2-7. OPENING THE CK/LI ASSEMBLY


❸ Two screws
(PTP2 × 8)
❷ Two screws
(M2 × 4)
❹ Open the CK/L1
assembly in the direction arrow
DK-4 board
❶ Flat cable
CN802 23P
CV-8 board
CK-19 board
LI-5 board

2-8. OPENING THE PS-225 AND CV-8 BOARDS


❸ Open the PS-225 board in the
direction of arrow Ⓐ .
❷ One screw
(PTP2 × 6)
Ⓐ
Ⓑ
❹ Flat cable
CN601 15P
❺ Open the CV-8 board in the
direction of arrow Ⓑ .
❶ Three screws
(P2 × 4)

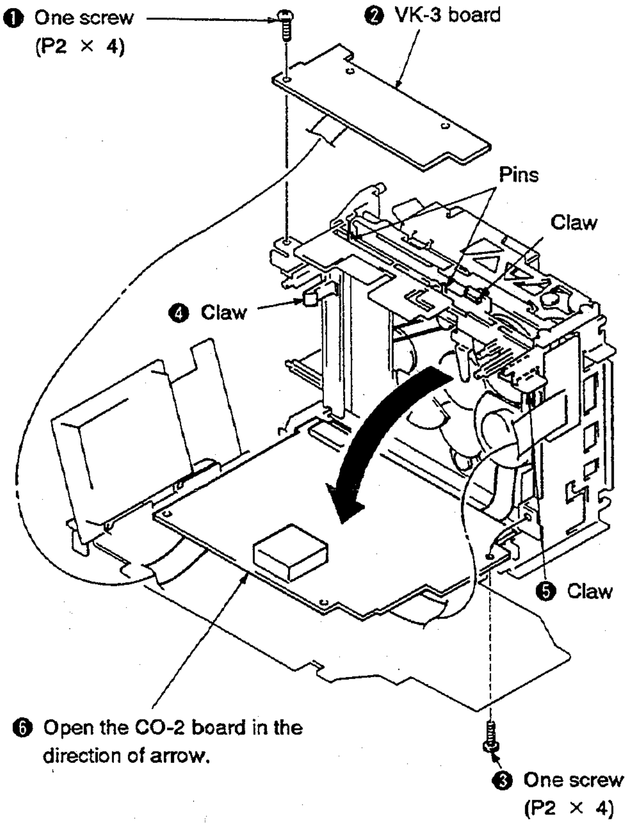
2-9. SEPARATING THE CAMERA AND VTR BLOCKS


❺ VTR block assembly
❶ Flat cable
CN801 14P
CV-8 board
❸ Two screws
(M2 × 4)
❹ Camera block assembly
❷ Connector
CN602 2P
CV-8 board

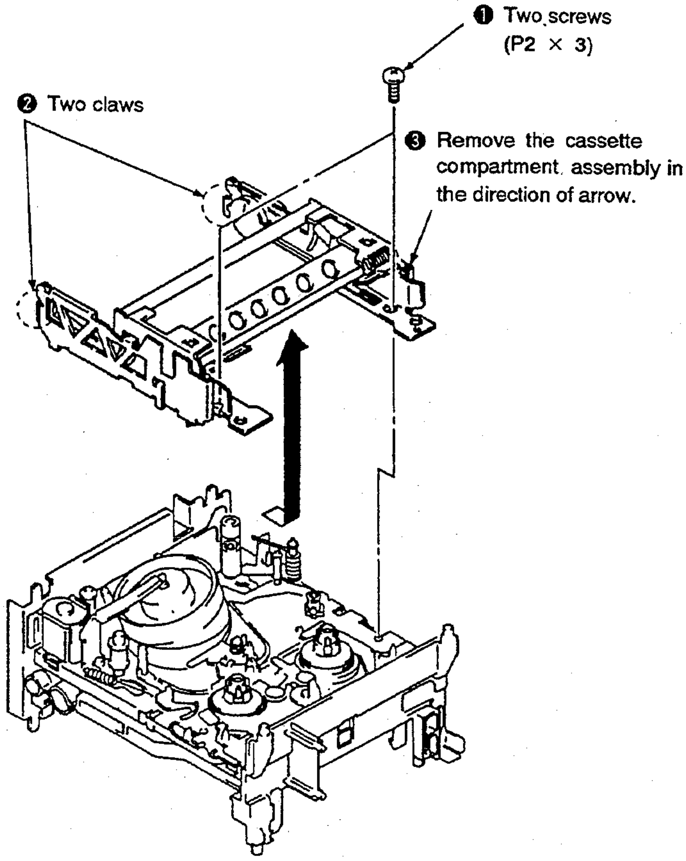
2-10. OPENING THE CO-2 AND VK-3 BOARDS

Notes: 1) Pay attention to two pins and a claw when removing the VK-3 board.

2) Care for the FE shield which is adhered to the RP amplifier shield case with a double coated tape.

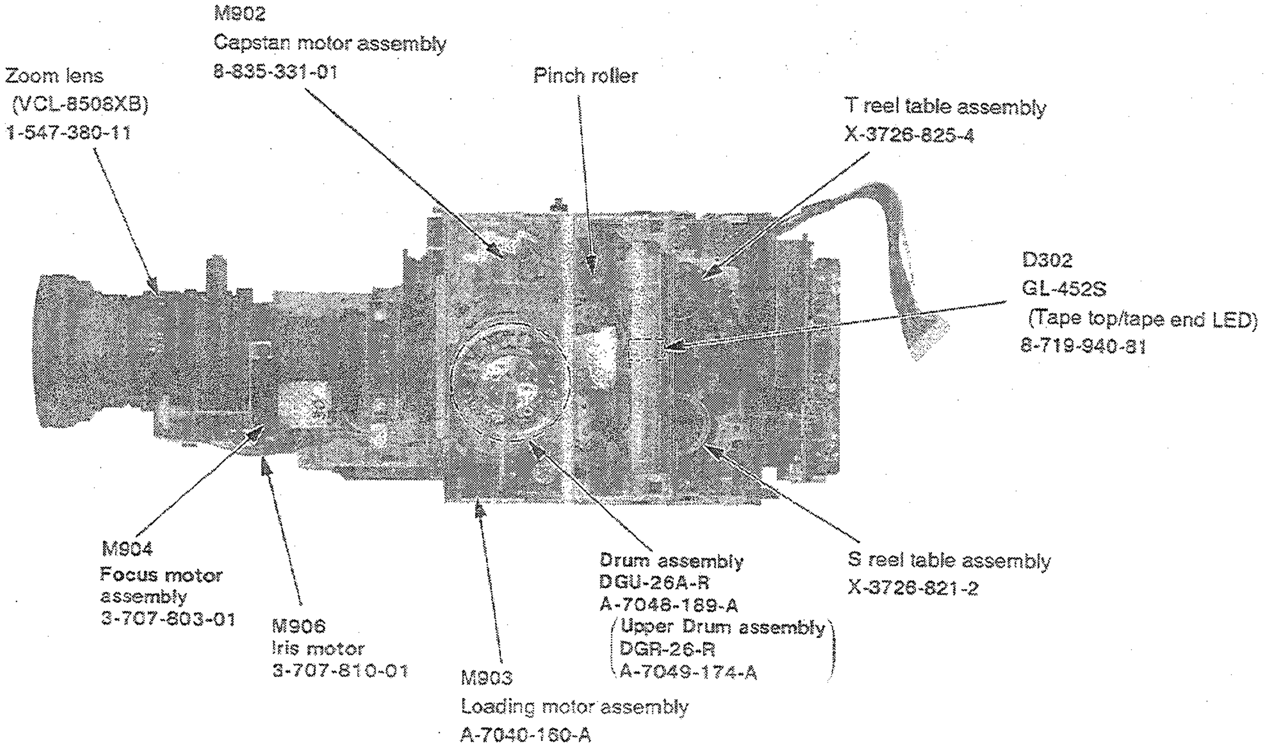

❶ One screw
(P2 × 4)
❷ VK-3 board
Pins
Claw
❹ Claw
❺ Claw
❻ Open the CO-2 board in the direction of arrow.
❸ One screw
(P2 × 4)

2-11. REMOVAL OF CASSETTE COMPARTMENT ASSEMBLY

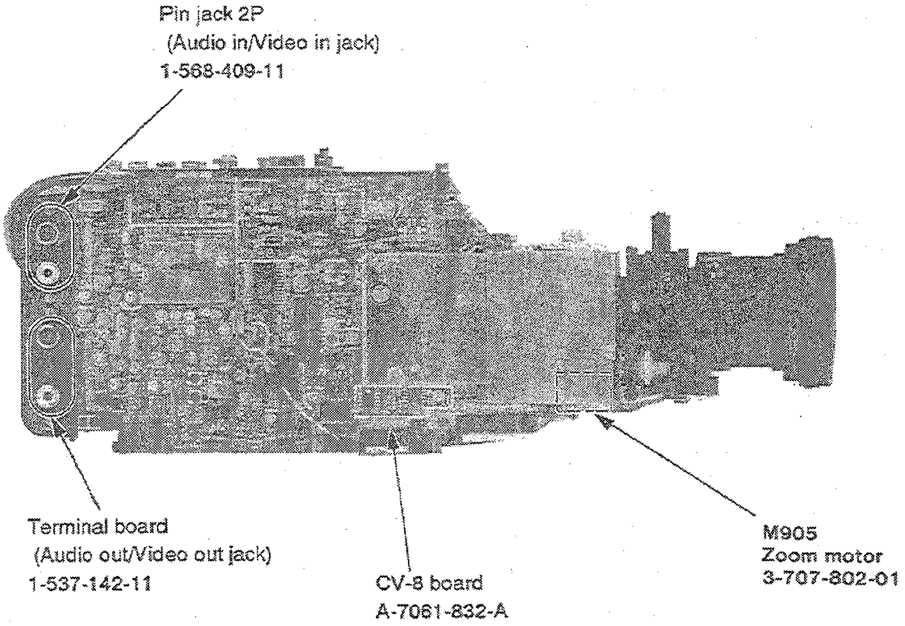

❶ Two screws
(P2 × 3)
❷ Two claws
❸ Remove the cassette compartment assembly in the direction of arrow.

2-12. INTERNAL VIEW

– Right Side –


Zoom lens
(VCL-8508XB)
1-547-380-11
M902
Capstan motor assembly
8-835-331-01
Pinch roller
T reel table assembly
X-3726-825-4
D302
GL-452S
(Tape top/tape end LED)
8-719-940-81
M904
Focus motor assembly
3-707-803-01
M906
Iris motor
3-707-810-01
M903
Loading motor assembly
A-7040-160-A
Drum assembly
DGU-26A-R
A-7048-189-A
(Upper Drum assembly
DGR-26-R
A-7049-174-A)
S reel table assembly
X-3726-821-2

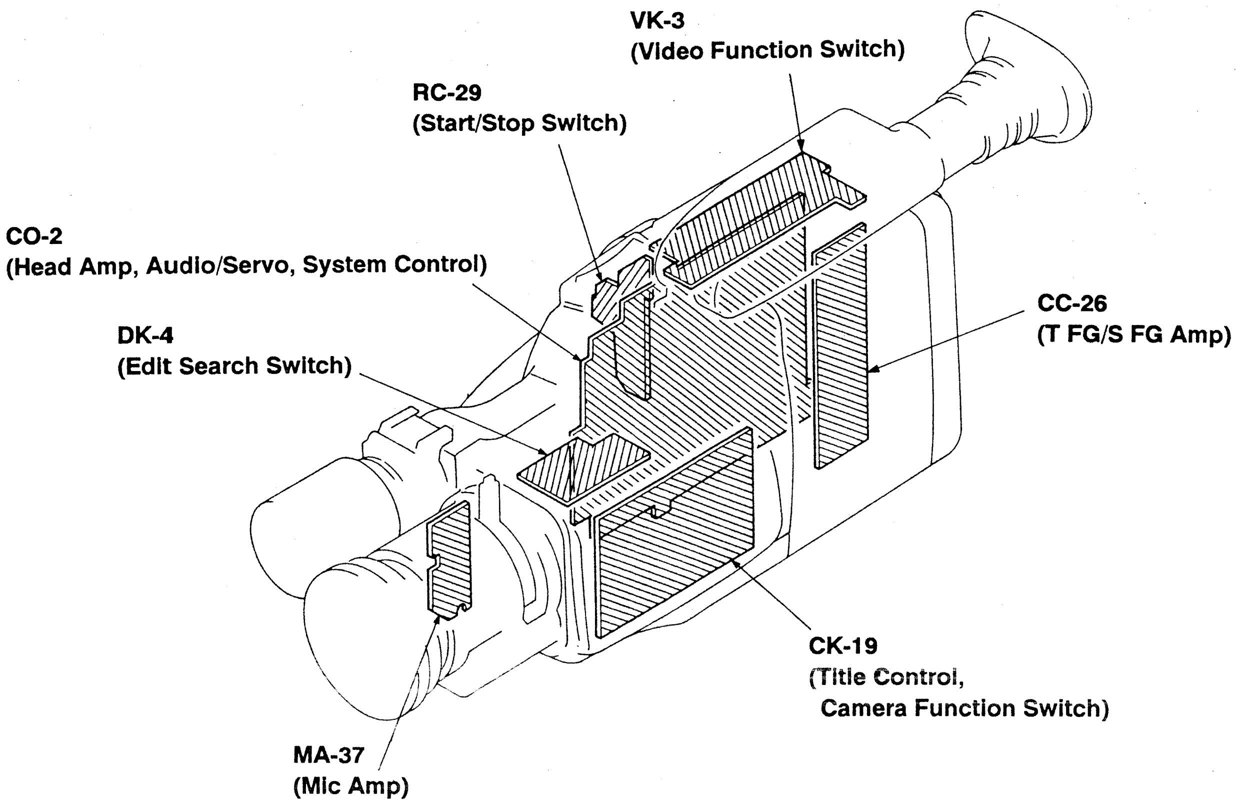
– Left Side –

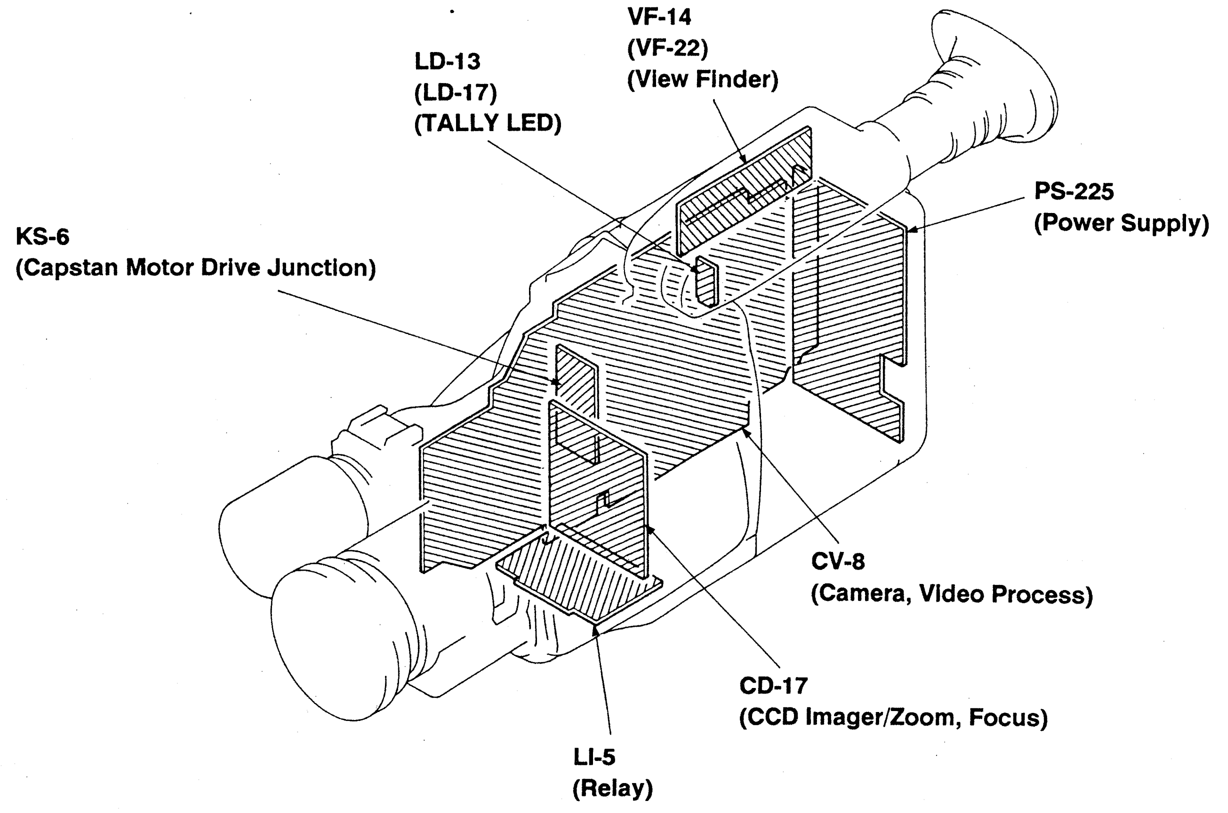

Pin jack 2P
(Audio in/Video in jack)
1-568-409-11
Terminal board
(Audio out/Video out jack)
1-537-142-11
CV-8 board
A-7061-832-A
M905
Zoom motor
3-707-802-01

SECTION 3

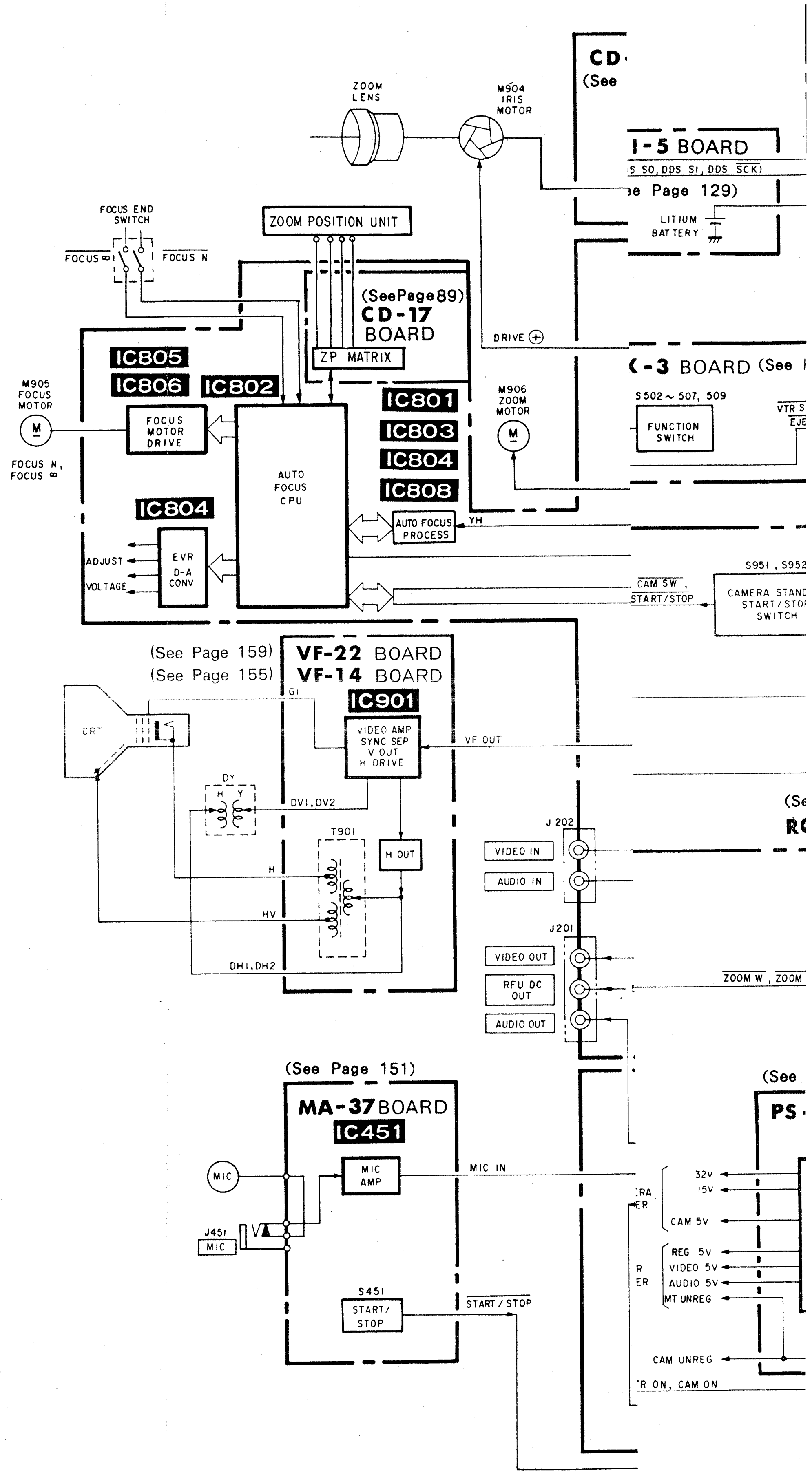
DIAGRAMS

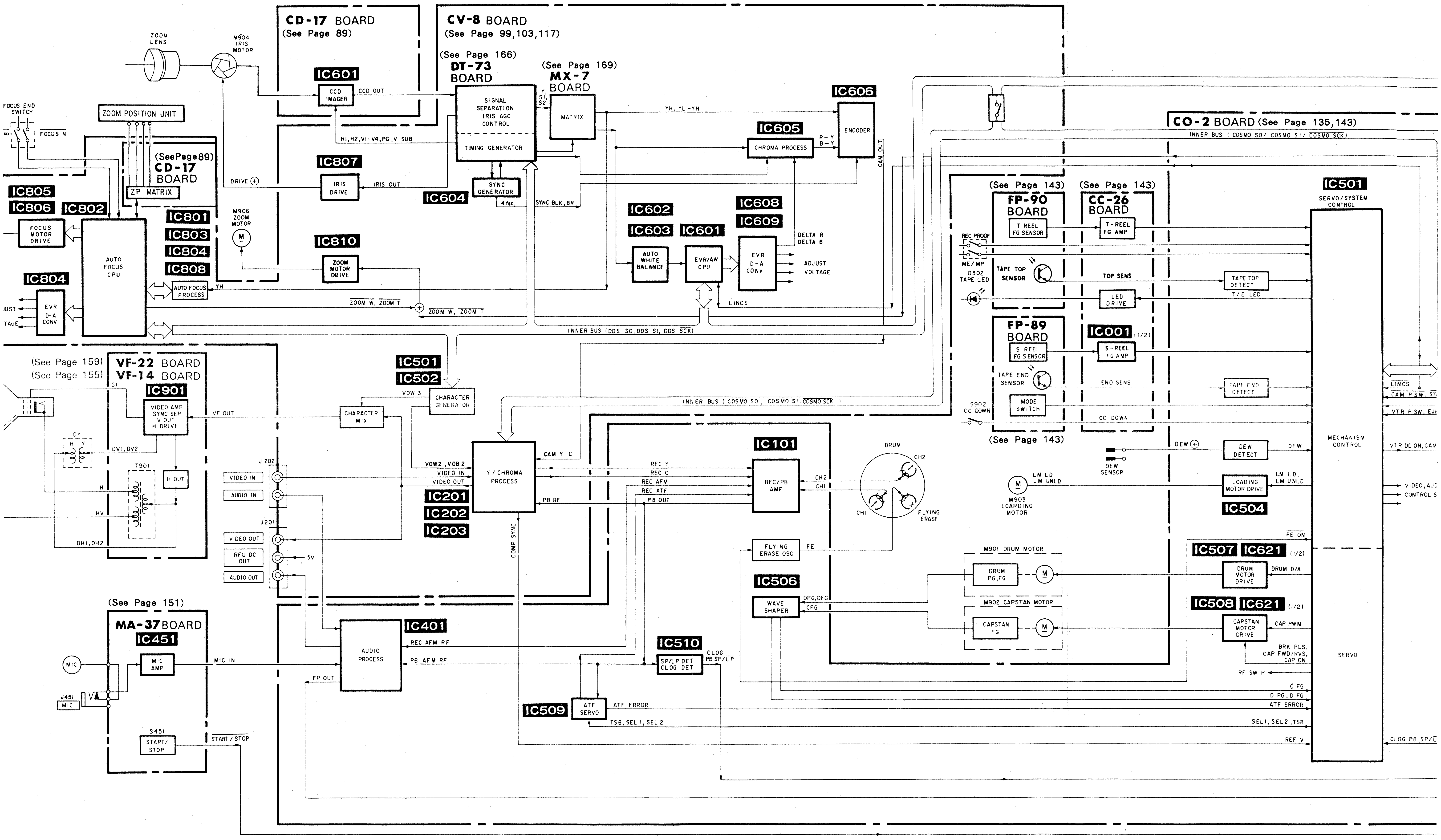
3-1. CIRCUIT BOARDS LOCATION

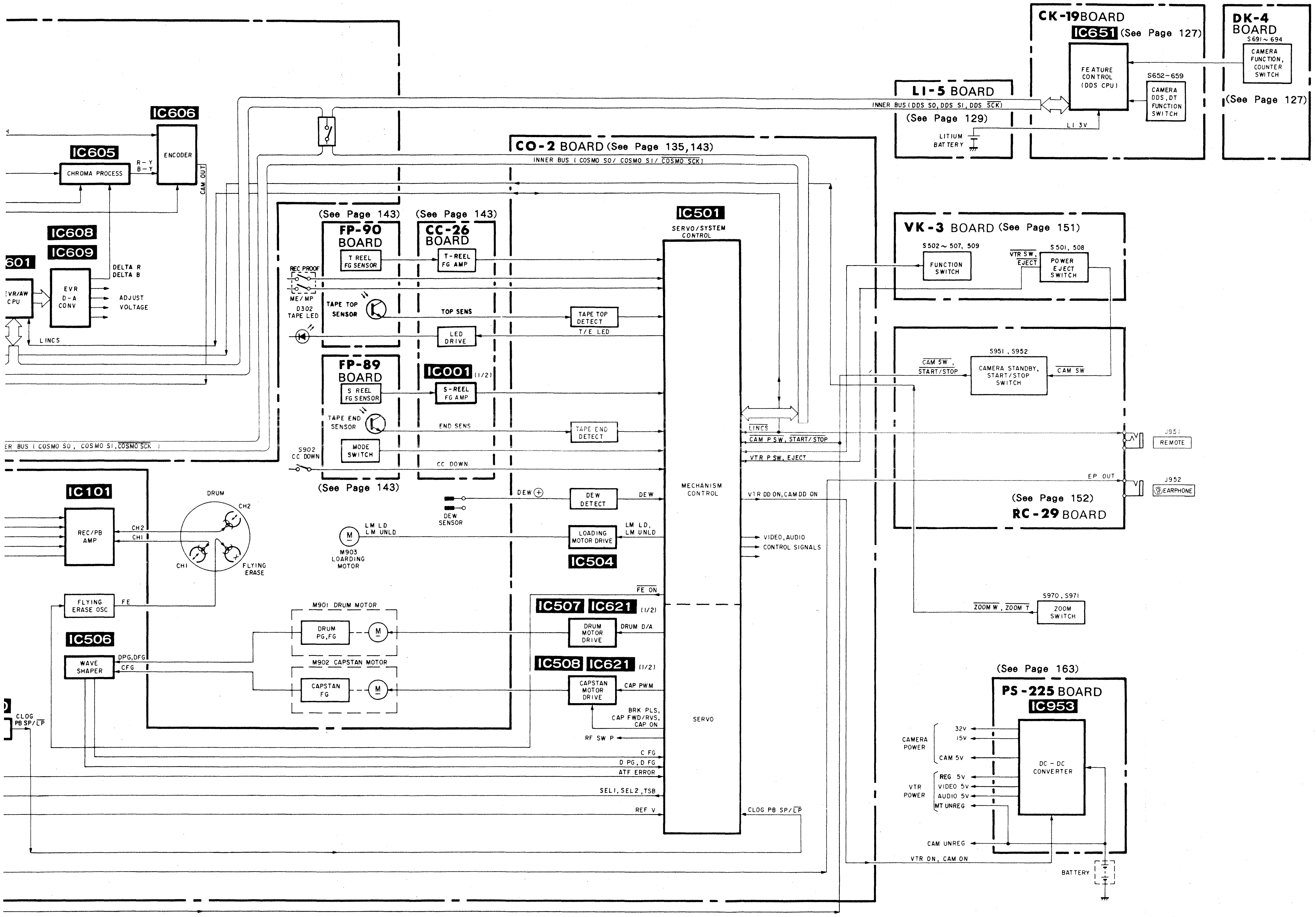

VK-3
(Video Function Switch)
RC-29
(Start/Stop Switch)
CO-2
(Head Amp, Audio/Servo, System Control)
DK-4
(Edit Search Switch)
CC-26
(T FG/S FG Amp)
CK-19
(Title Control,
Camera Function Switch)
MA-37
(Mic Amp)


VF-14
(VF-22)
(View Finder)
LD-13
(LD-17)
(TALLY LED)
PS-225
(Power Supply)
KS-6
(Capstan Motor Drive Junction)
CV-8
(Camera, Video Process)
CD-17
(CCD Imager/Zoom, Focus)
LI-5
(Relay)

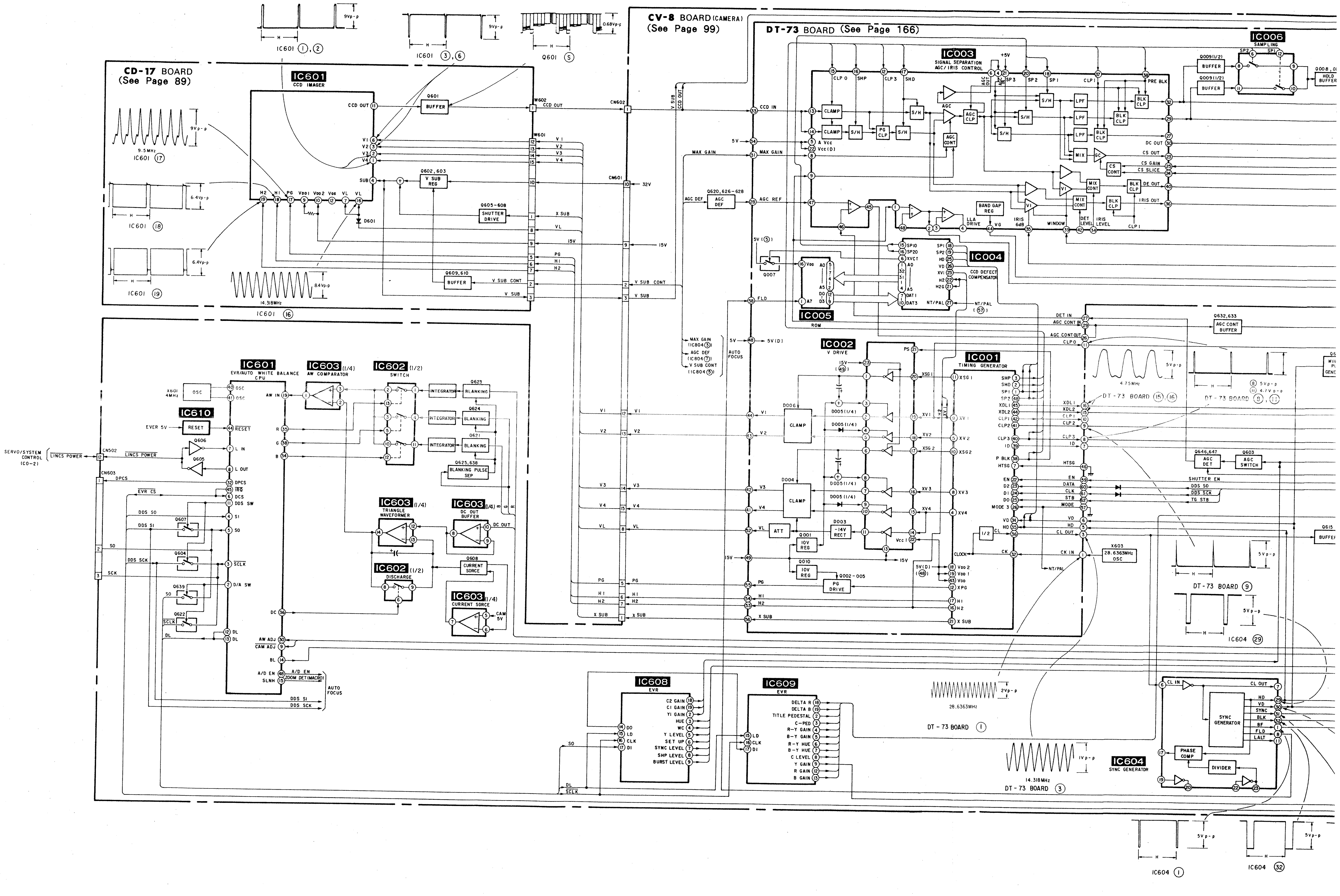
3-2. OVERALL BLOCK DIAGRAM

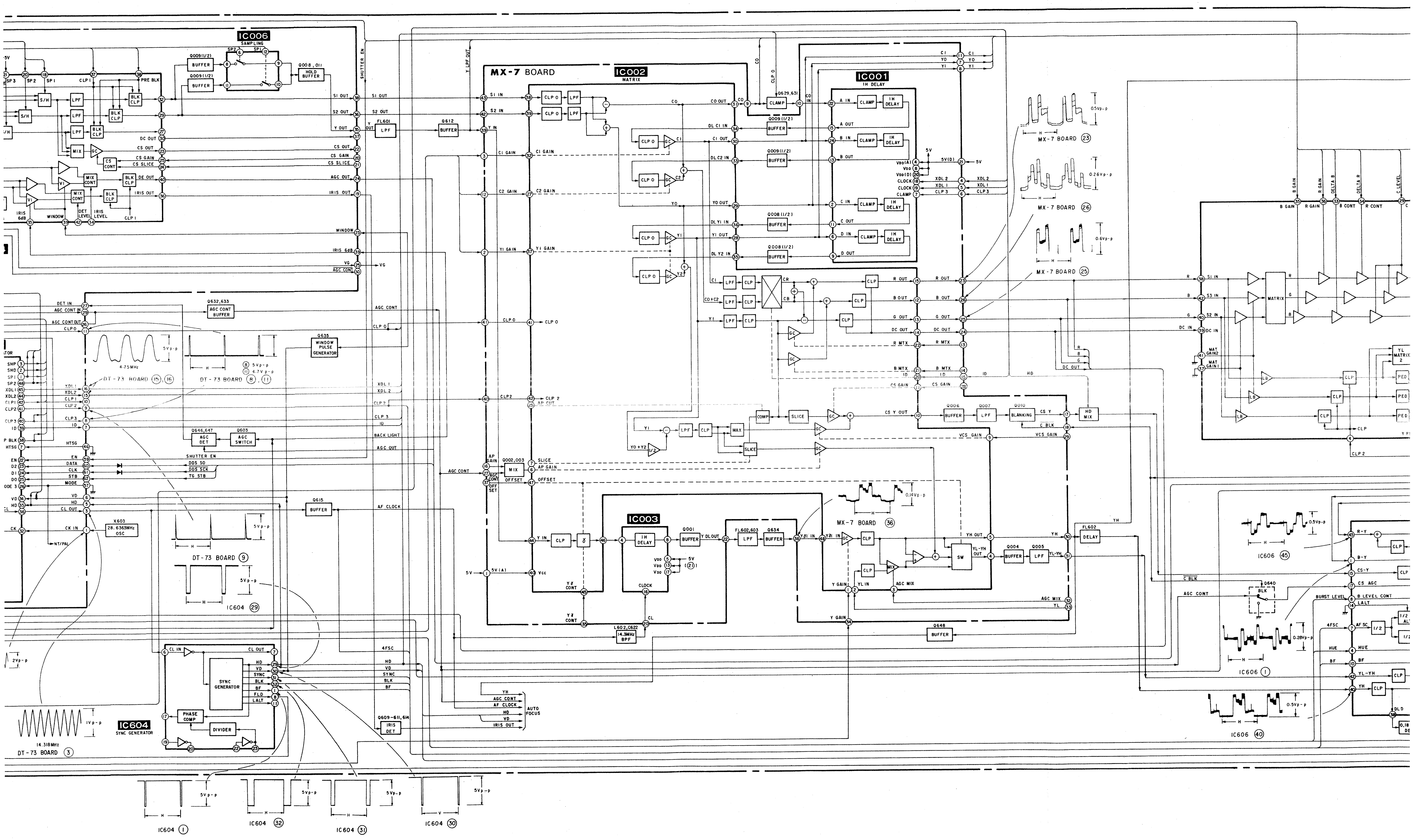

ZOOM LENS
M904 IRIS MOTOR
CD·
(See
I-5 BOARD
S SO, DDS SI, DDS SCK)
e Page 129)
LITIUM BATTERY
FOCUS END SWITCH
FOCUS ∞
FOCUS N
ZOOM POSITION UNIT
(SeePage89)
CD-17
BOARD
ZP MATRIX
DRIVE ⊕
IC805
IC806
IC802
IC801
IC803
IC804
IC808
M905 FOCUS MOTOR
M
FOCUS N, FOCUS ∞
FOCUS MOTOR DRIVE
AUTO FOCUS CPU
M906 ZOOM MOTOR
-3 BOARD (See
S502 ~ 507, 509
FUNCTION SWITCH
VTR S
EJE
IC804
AUTO FOCUS PROCESS
YH
ADJUST
VOLTAGE
EVR D-A CONV
S951, S952
CAM SW, START/STOP
CAMERA STAND START/STOP SWITCH
(See Page 159)
(See Page 155)
VF-22 BOARD
VF-14 BOARD
IC901
G1
CRT
VIDEO AMP SYNC SEP V OUT H DRIVE
VF OUT
DY
H Y
DV1, DV2
T901
H OUT
H
HV
DH1, DH2
J202
VIDEO IN
AUDIO IN
J201
VIDEO OUT
RFU DC OUT
AUDIO OUT
(Se
R
ZOOM W, ZOOM
(See Page 151)
MA-37 BOARD
IC451
MIC
MIC AMP
MIC IN
J451 MIC
S451 START/STOP
START/STOP
(See
PS
32V
15V
CAM 5V
REG 5V
VIDEO 5V
AUDIO 5V
MT UNREG
CAM UNREG
R ON, CAM ON

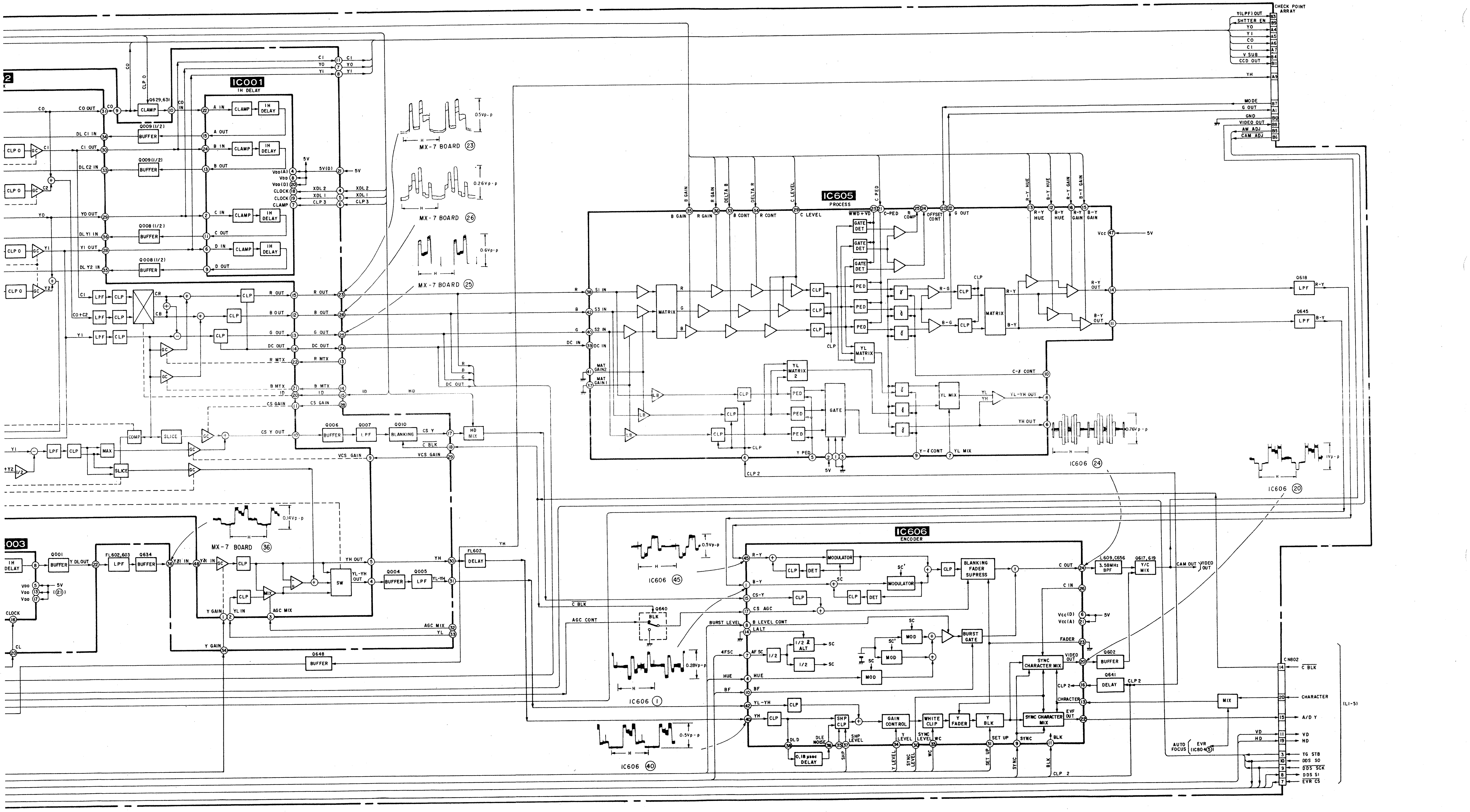

CD-17 BOARD
(See Page 89)
CV-8 BOARD
(See Page 99,103,117)
(See Page 166)
DT-73 BOARD
(See Page 169)
MX-7 BOARD
ZOOM LENS
M904 IRIS MOTOR
FOCUS END SWITCH
FOCUS N
ZOOM POSITION UNIT
IC601
CCD IMAGER
CCD OUT
SIGNAL SEPARATION IRIS AGC CONTROL
TIMING GENERATOR
Y, S1, S2
MATRIX
YH, YL-YH
IC606
ENCODER
IC605
CHROMA PROCESS
R-Y
B-Y
CAM OUT
H1,H2,V1-V4,PG,V SUB
(SeePage89)
CD-17 BOARD
ZP MATRIX
IC807
IRIS DRIVE
IRIS OUT
DRIVE
IC604
SYNC GENERATOR
4fsc
SYNC BLK, BR
IC805
IC806
IC802
FOCUS MOTOR DRIVE
AUTO FOCUS CPU
IC801
IC803
IC804
IC808
M906 ZOOM MOTOR
IC810
ZOOM MOTOR DRIVE
AUTO FOCUS PROCESS
YH
ZOOM W, ZOOM T
ZOOM W, ZOOM T
IC804
EVR D-A CONV
JUST
TAGE
IC602
IC603
IC601
AUTO WHITE BALANCE
EVR/AW CPU
IC608
IC609
EVR D-A CONV
DELTA R
DELTA B
ADJUST VOLTAGE
LINCS
INNER BUS (DDS SO, DDS SI, DDS SCK)
(See Page 159)
(See Page 155)
VF-22 BOARD
VF-14 BOARD
IC901
VIDEO AMP SYNC SEP V OUT H DRIVE
VF OUT
G1
DY
H
V
DV1, DV2
T901
H OUT
H
HV
DH1, DH2
IC501
IC502
VOW 3
CHARACTER GENERATOR
CHARACTER MIX
INNER BUS (COSMO SO, COSMO SI, COSMO SCK)
Y / CHROMA PROCESS
CAM Y C
VOW2, VOB2
VIDEO IN
VIDEO OUT
PB RF
IC201
IC202
IC203
COMP SYNC
J202
VIDEO IN
AUDIO IN
J201
VIDEO OUT
RFU DC OUT
AUDIO OUT
5V
IC101
REC/PB AMP
REC Y
REC C
REC AFM
REC ATF
PB OUT
CH2
CH1
DRUM
CH2
CH1
FLYING ERASE
FLYING ERASE OSC
FE
IC506
WAVE SHAPER
DPG, DFG
CFG
(See Page 151)
MA-37 BOARD
IC451
MIC
MIC AMP
MIC IN
J451 MIC
S451 START/STOP
START / STOP
IC401
AUDIO PROCESS
REC AFM RF
PB AFM RF
EP OUT
IC510
SP/LP DET CLOG DET
CLOG PB SP/LP
IC509
ATF SERVO
ATF ERROR
TSB, SEL1, SEL2
CO-2 BOARD (See Page 135,143)
INNER BUS (COSMO SO/ COSMO SI/ COSMO SCK)
(See Page 143)
FP-90 BOARD
T REEL FG SENSOR
(See Page 143)
CC-26 BOARD
T-REEL FG AMP
REC PROOF
ME/MP
D302 TAPE LED
TAPE TOP SENSOR
TOP SENS
LED DRIVE
TAPE TOP DETECT
T/E LED
FP-89 BOARD
S REEL FG SENSOR
IC001 (1/2)
S-REEL FG AMP
TAPE END SENSOR
END SENS
TAPE END DETECT
S902 CC DOWN
MODE SWITCH
CC DOWN
(See Page 143)
IC501
SERVO/SYSTEM CONTROL
MECHANISM CONTROL
SERVO
LINCS
CAM P SW, ST
VTR P SW, EJ
VTR DD ON, CAM
DEW SENSOR
DEW
DEW DETECT
DEW
M903 LOARDING MOTOR
LM LD
LM UNLD
LOADING MOTOR DRIVE
LM LD, LM UNLD
IC504
VIDEO, AUD
CONTROL S
FE ON
IC507
IC621 (1/2)
M901 DRUM MOTOR
DRUM PG, FG
DRUM MOTOR DRIVE
DRUM D/A
IC508
IC621 (1/2)
M902 CAPSTAN MOTOR
CAPSTAN FG
CAPSTAN MOTOR DRIVE
CAP PWM
BRK PLS, CAP FWD/RVS, CAP ON
RF SW P
C FG
D PG, D FG
ATF ERROR
SEL1, SEL2, TSB
REF V
CLOG PB SP/L


CK-19 BOARD
IC651 (See Page 127)
FEATURE CONTROL (DDS CPU)
S652~659
CAMERA DDS, DT FUNCTION SWITCH
LI 3V
DK-4 BOARD
S691~694
CAMERA FUNCTION, COUNTER SWITCH
(See Page 127)
LI-5 BOARD
INNER BUS (DDS SO, DDS SI, DDS SCK)
(See Page 129)
LITIUM BATTERY
IC606
ENCODER
IC605
CHROMA PROCESS
R-Y
B-Y
CAM OUT
IC608
IC609
601
EVR/AW CPU
EVR D-A CONV
DELTA R
DELTA B
ADJUST VOLTAGE
LINCS
CO-2 BOARD (See Page 135,143)
INNER BUS (COSMO SO/ COSMO SI/ COSMO SCK)
(See Page 143)
FP-90 BOARD
T REEL FG SENSOR
CC-26 BOARD
T-REEL FG AMP
REC PROOF
ME/MP
D302 TAPE LED
TAPE TOP SENSOR
TOP SENS
TAPE TOP DETECT
LED DRIVE
T/E LED
FP-89 BOARD
S REEL FG SENSOR
IC001 (1/2)
S-REEL FG AMP
TAPE END SENSOR
END SENS
TAPE END DETECT
MODE SWITCH
S902 CC DOWN
CC DOWN
(See Page 143)
ER BUS (COSMO SO, COSMO SI, COSMO SCK)
IC501
SERVO/SYSTEM CONTROL
MECHANISM CONTROL
SERVO
LINCS
CAM P SW, START/STOP
VTR P SW, EJECT
VTR DD ON, CAM DD ON
VIDEO, AUDIO CONTROL SIGNALS
IC101
REC/PB AMP
CH2
CH1
DRUM
FLYING ERASE
DEW
DEW SENSOR
DEW DETECT
M903 LOARDING MOTOR
LM LD
LM UNLD
LOADING MOTOR DRIVE
IC504
FE ON
FLYING ERASE OSC
FE
IC506
WAVE SHAPER
DPG, DFG
CFG
M901 DRUM MOTOR
DRUM PG, FG
IC507 IC621 (1/2)
DRUM MOTOR DRIVE
DRUM D/A
M902 CAPSTAN MOTOR
CAPSTAN FG
IC508 IC621 (1/2)
CAPSTAN MOTOR DRIVE
CAP PWM
BRK PLS, CAP FWD/RVS, CAP ON
RF SW P
C FG
D PG, D FG
ATF ERROR
SEL1, SEL2, TSB
REF V
CLOG PB SP/LP
VK-3 BOARD (See Page 151)
S502~507, 509
FUNCTION SWITCH
VTR SW, EJECT
S501, 508
POWER EJECT SWITCH
S951, S952
CAM SW, START/STOP
CAMERA STANDBY, START/STOP SWITCH
CAM SW
J951
REMOTE
EP OUT
J952
EARPHONE
(See Page 152)
RC-29 BOARD
S970, S971
ZOOM W, ZOOM T
ZOOM SWITCH
(See Page 163)
PS-225 BOARD
IC953
DC-DC CONVERTER
CAMERA POWER
32V
15V
CAM 5V
VTR POWER
REG 5V
VIDEO 5V
AUDIO 5V
MT UNREG
CAM UNREG
VTR ON, CAM ON
BATTERY

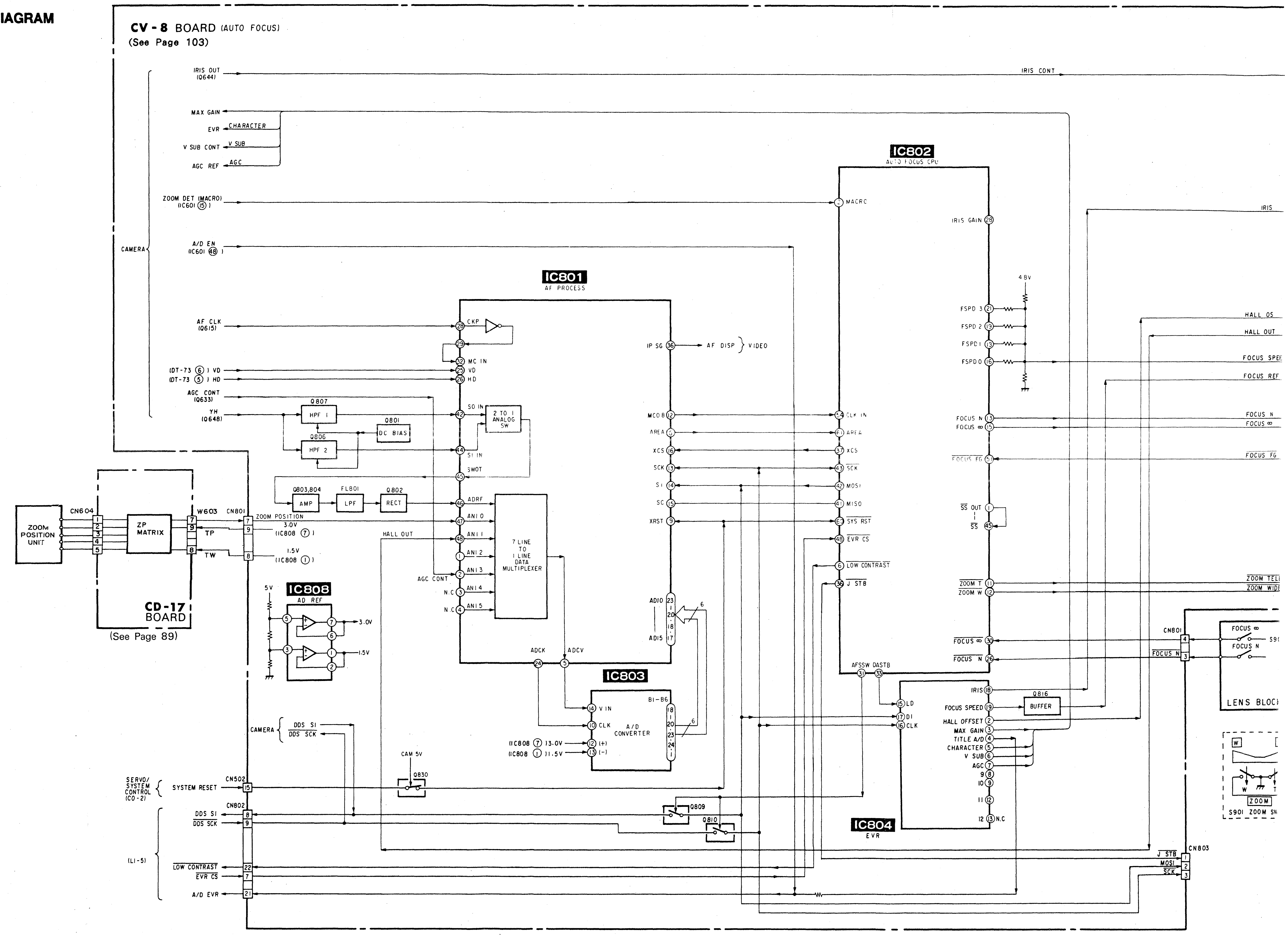
3-3. CAMERA BLOCK DIAGRAM

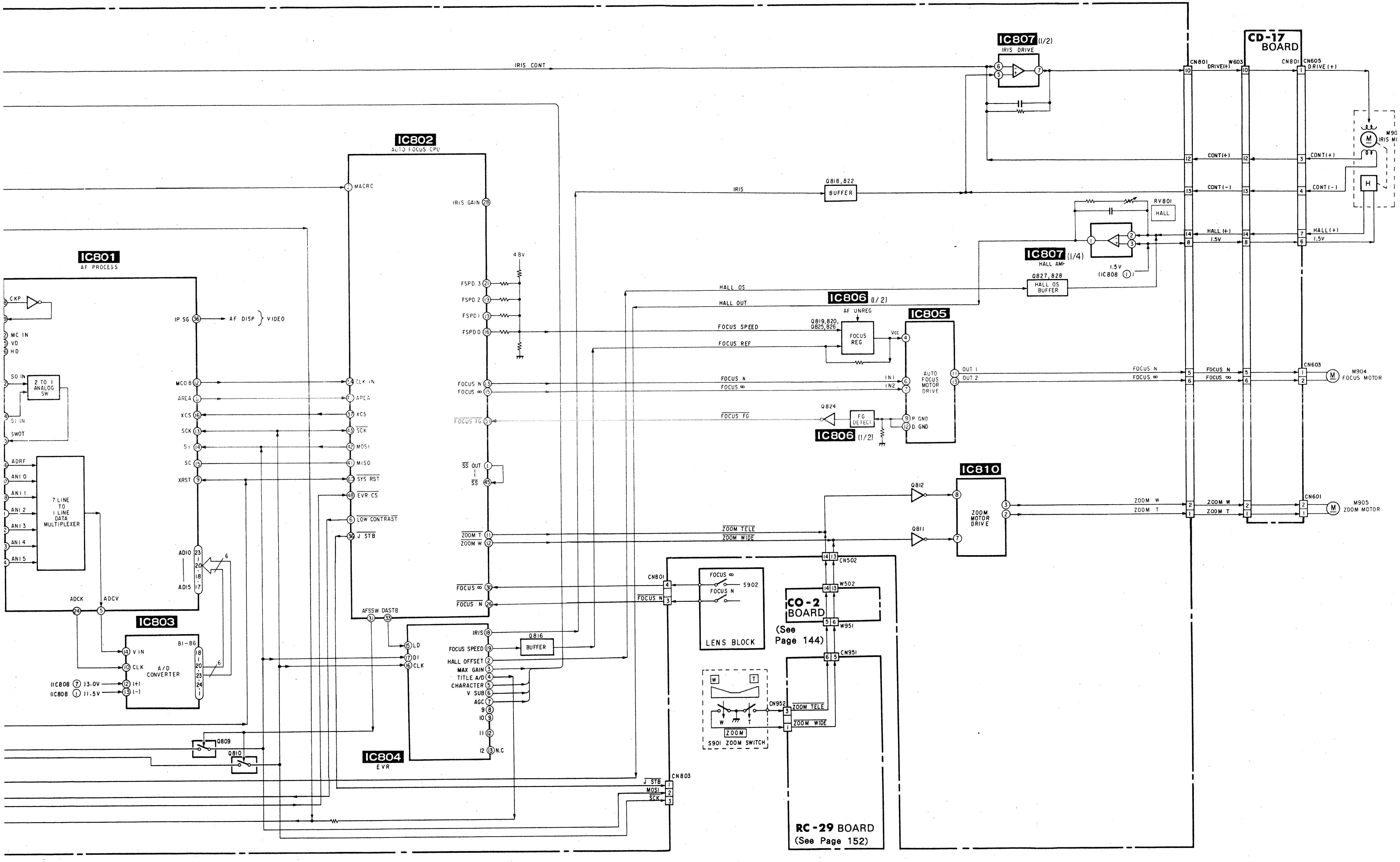

CD-17 BOARD
(See Page 89)
CV-8 BOARD (CAMERA)
(See Page 99)
DT-73 BOARD (See Page 166)
IC601
CCD IMAGER
Q601
BUFFER
Q602,603
V SUB REG
Q605-608
SHUTTER DRIVE
Q609,610
BUFFER
IC601
EVR/AUTO WHITE BALANCE CPU
IC603 (1/4)
AW COMPARATOR
IC602 (1/2)
SWITCH
IC610
RESET
INTEGRATOR
BLANKING
Q625,638
BLANKING PULSE SEP
IC603 (1/4)
TRIANGLE WAVEFORMER
IC603 (1/4)
DC OUT BUFFER
IC602 (1/2)
DISCHARGE
Q608
CURRENT SORCE
IC603 (1/4)
CURRENT SORCE
SERVO/SYSTEM CONTROL (CO-2)
LINCS POWER
AUTO FOCUS
IC608
EVR
IC609
EVR
IC003
SIGNAL SEPARATION AGC/IRIS CONTROL
CLAMP
S/H
PG CLP
AGC
AGC CLP
AGC CONT
LPF
BLK CLP
MIX
CS CONT
MIX CONT
BAND GAP REG
LLA DRIVE
IC006
SAMPLING
Q009(1/2)
BUFFER
Q008
HOLD BUFFER
IC004
CCD DEFECT COMPENSATOR
IC005
ROM
Q007
IC002
V DRIVE
IC001
TIMING GENERATOR
D006
CLAMP
D004
CLAMP
D005
D003
-14V RECT
Q001
10V REG
Q010
10V REG
Q002-005
PG DRIVE
ATT
X603
28.6363MHz OSC
Q632,633
AGC CONT BUFFER
Q646,647
AGC DET
Q603
AGC SWITCH
IC604
SYNC GENERATOR
PHASE COMP
DIVIDER
Q615
BUFFER
IC601 ①,②
9Vp-p
IC601 ③,⑥
Q601 ⑤
0.68Vp-p
9.5MHz
IC601 ⑰
IC601 ⑱
IC601 ⑲
6.4Vp-p
14.318MHz
8.4Vp-p
IC601 ⑯
4.75MHz
DT-73 BOARD ⑮,⑯
DT-73 BOARD ⑨,⑪
DT-73 BOARD ⑨
IC604 ㉙
28.6363MHz
2Vp-p
DT-73 BOARD ①
14.318MHz
1Vp-p
DT-73 BOARD ③
IC604 ①
IC604 ㉜
5Vp-p


IC006
SAMPLING
Q009(1/2) BUFFER
Q008, 011 HOLD BUFFER
SHUTTER EN
MX-7 BOARD
IC002
MATRIX
IC001
1H DELAY
Q629, 631 CLAMP
FL601 LPF
Q612 BUFFER
S1 OUT
S2 OUT
Y OUT
DC OUT
CS OUT
CS GAIN
CS SLICE
AGC OUT
IRIS OUT
WINDOW
IRIS 6dB
VG
AGC CONT
Q632, 633 AGC CONT BUFFER
Q635 WINDOW PULSE GENERATOR
Q646, 647 AGC DET
Q603 AGC SWITCH
Q615 BUFFER
X603 28.6363MHz OSC
Q002, 003 MIX
IC003
1H DELAY
Q001 BUFFER
FL602, 603 LPF
Q634 BUFFER
L602, C622 14.3MHz BPF
Q648 BUFFER
Q004 BUFFER
Q005 LPF
Q006 BUFFER
Q007 LPF
Q010 BLANKING
HD MIX
FL602 DELAY
MATRIX
Q640 BLK
IC604
SYNC GENERATOR
PHASE COMP
DIVIDER
Q609~611, 614 IRIS DET
AUTO FOCUS
4.75MHz
5Vp-p
DT-73 BOARD ⑮, ⑯
DT-73 BOARD ⑧, ⑪
DT-73 BOARD ⑨
IC604 ㉙
14.318MHz
DT-73 BOARD ③
1Vp-p
2Vp-p
IC604 ①
IC604 ㉜
IC604 ㉛
IC604 ㉚
MX-7 BOARD ㉓
0.5Vp-p
MX-7 BOARD ㉖
0.26Vp-p
MX-7 BOARD ㉕
0.6Vp-p
MX-7 BOARD ㊱
0.14Vp-p
IC606 ㊺
IC606 ①
0.28Vp-p
IC606 ㊵
B GAIN
R GAIN
B CONT
R CONT
DELTA B
DELTA R
C LEVEL

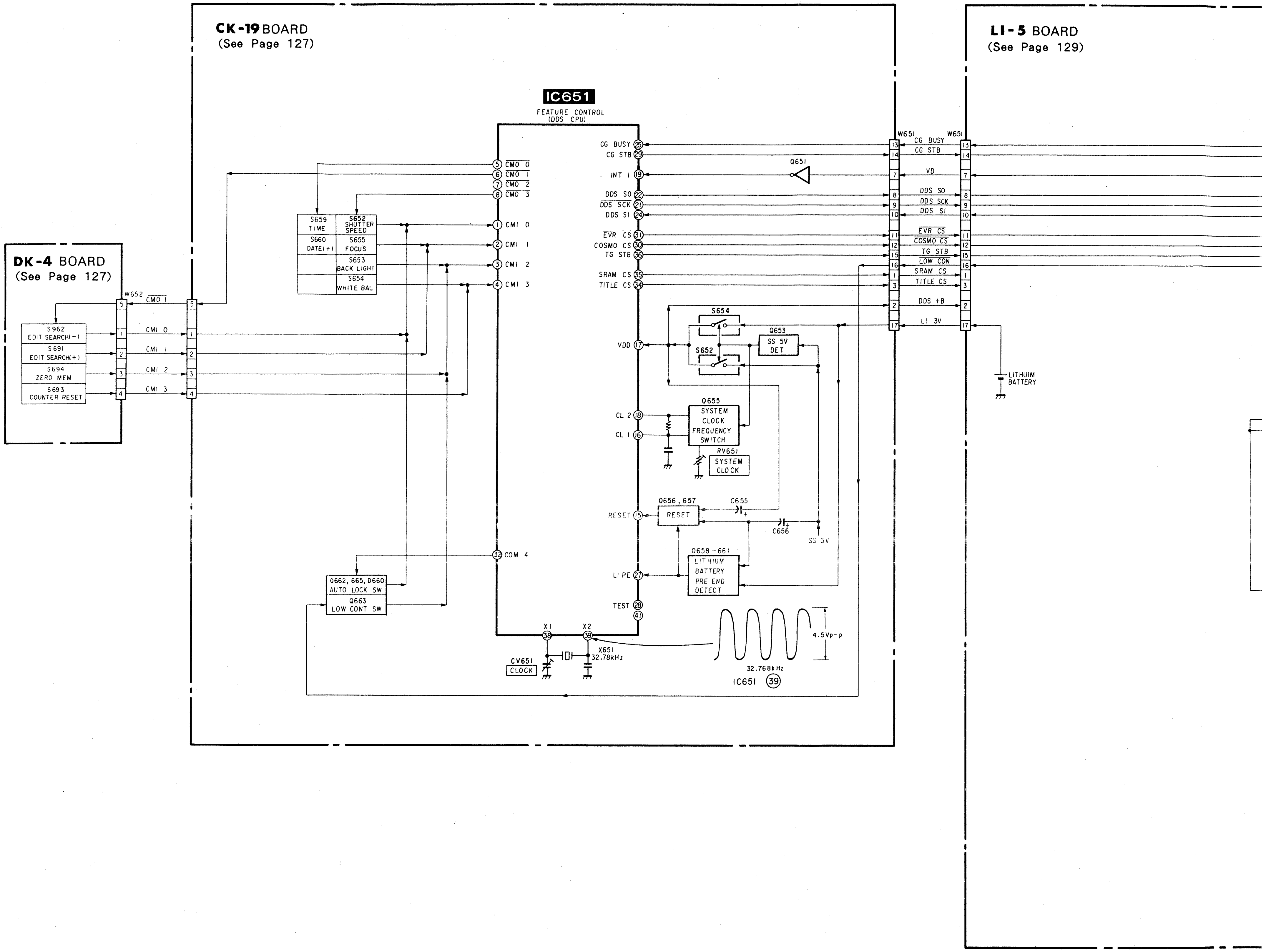

IC001
1H DELAY
IC605
PROCESS
IC606
ENCODER
CHECK POINT ARRAY
Y(LPF) OUT
SHTTER EN
YO
YI
CO
CI
V SUB
CCD OUT
YH
MODE
G OUT
GND
VIDEO OUT
AW ADJ
CAM ADJ
CO OUT
DL C1 IN
C1 OUT
DL C2 IN
YO OUT
DL Y1 IN
Y1 OUT
DL Y2 IN
CLP O
GC
CLAMP
1H DELAY
BUFFER
Q009(1/2)
Q008(1/2)
Q629,631
A IN
A OUT
B IN
B OUT
C IN
C OUT
D IN
D OUT
VDD(A)
VDD
VDD(D)
CLOCK
XDL 2
XDL 1
CLP 3
5V
5V(D)
LPF
CLP
CR
CB
R OUT
B OUT
G OUT
DC OUT
R MTX
B MTX
ID
HD
CS GAIN
CS Y OUT
COMP
SLICE
MAX
Q006
Q007
Q010
BLANKING
CS Y
C BLK
HD MIX
VCS GAIN
MX-7 BOARD ㉓
0.5Vp-p
MX-7 BOARD ㉖
0.26Vp-p
MX-7 BOARD ㉕
0.6Vp-p
MX-7 BOARD ㊱
0.14Vp-p
Q001
Y DLOUT
FL602,603
Q634
Y(2) IN
YH OUT
YL-YH OUT
SW
Q004
Q005
YL-YH
FL602
DELAY
Y GAIN
YL IN
AGC MIX
YL
Q648
CLOCK
CL
B GAIN
R GAIN
DELTA B
DELTA R
C LEVEL
C PED
B CONT
R CONT
WWD+VD
C-PED
R COMP
OFFSET CONT
G OUT
R-Y HUE
B-Y HUE
R-Y GAIN
B-Y GAIN
Vcc
S1 IN
S3 IN
S2 IN
DC IN
MAT GAIN2
MAT GAIN1
MATRIX
GATE DET
PED
YL MATRIX 1
YL MATRIX 2
GATE
R-G
B-G
R-Y OUT
B-Y OUT
C-γ CONT
YL MIX
YL-YH OUT
YH OUT
Y-γ CONT
Y PED
CLP 2
IC606 ㉔
0.76Vp-p
Q618
Q645
IC606 ⑳
1Vp-p
IC606 ㊺
0.5Vp-p
IC606 ①
0.28Vp-p
IC606 ㊵
0.5Vp-p
R-Y
B-Y
CS-Y
CS AGC
MODULATOR
DET
SC
SC'
BLANKING FADER SUPRESS
C OUT
C IN
L609,C656
3.58MHz BPF
Q617,619
Y/C MIX
CAM OUT
VIDEO OUT
Q640
BLK
AGC CONT
BURST LEVEL
B LEVEL CONT
LALT
4FSC
AF SC
1/2
1/2 & ALT
MOD
BURST GATE
Vcc(D)
Vcc(A)
FADER
SYNC CHARACTER MIX
VIDEO OUT
Q602
Q641
CLP 2
CHRACTER
EVF OUT
HUE
BF
YL-YH
SHP CLP
GAIN CONTROL
WHITE CLIP
Y FADER
Y BLK
DLD
DLE NOISE
SHP LEVEL
0.18μsec DELAY
Y LEVEL
SYNC LEVEL
WC
SET UP
SYNC
CN802
C BLK
CHARACTER
MIX
A/D Y
VD
HD
AUTO FOCUS
EVR (IC804⑤)
TG STB
DDS SO
DDS SCK
DDS SI
EVR CS
(L1-5)
003
002

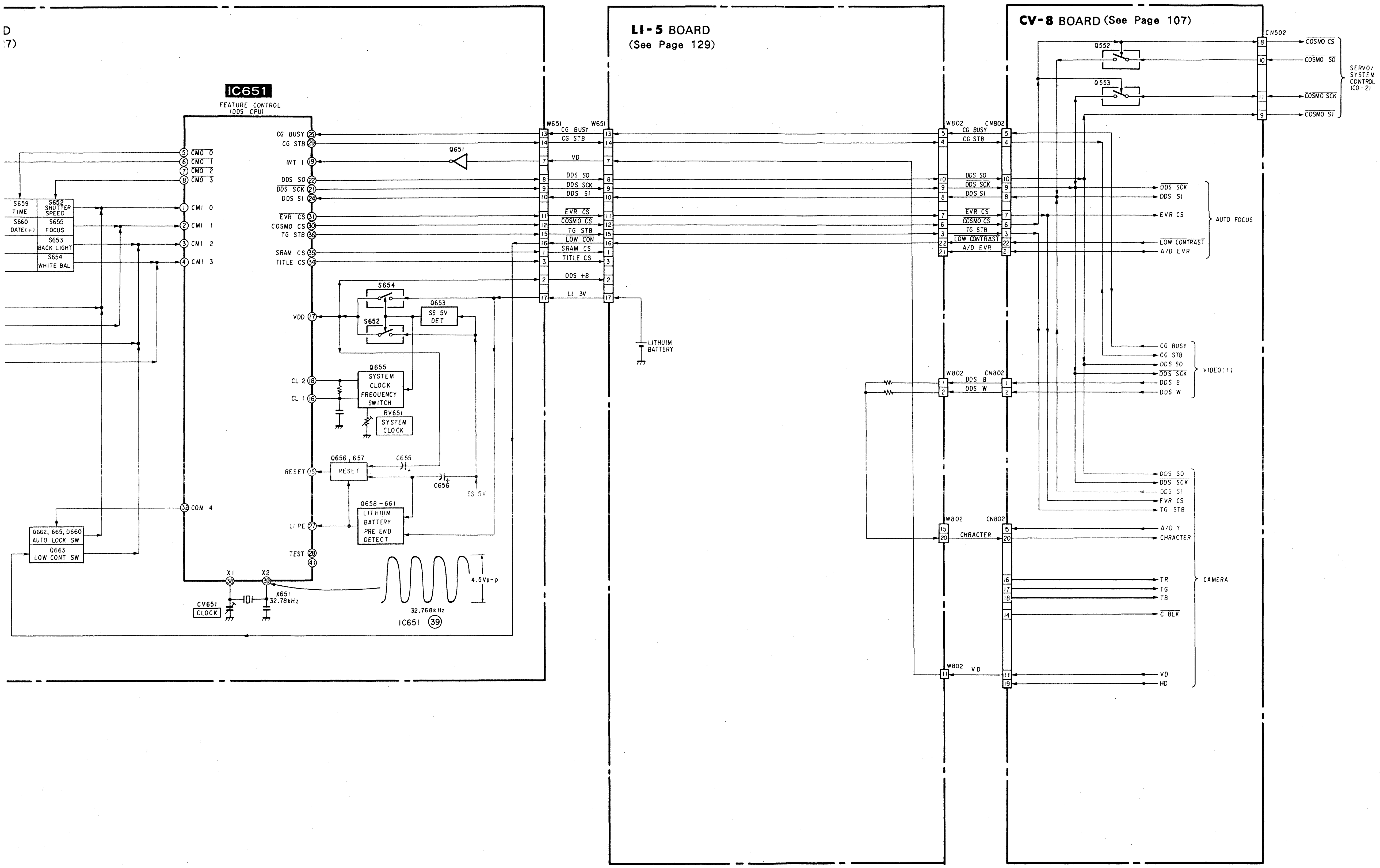
3-4. AUTO FOCUS BLOCK DIAGRAM


CV-8 BOARD (AUTO FOCUS)
(See Page 103)
CAMERA
IRIS OUT (Q644)
IRIS CONT
MAX GAIN
EVR
CHARACTER
V SUB CONT
V SUB
AGC REF
AGC
ZOOM DET (MACRO) (IC601 ⑮)
A/D EN (IC601 ㊽)
AF CLK (Q615)
(DT-73 ⑥) VD
(DT-73 ⑤) HD
AGC CONT (Q633)
YH (Q648)
Q807
HPF 1
Q806
HPF 2
Q801
DC BIAS
2 TO 1 ANALOG SW
Q803,804
AMP
FL801
LPF
Q802
RECT
IC801
AF PROCESS
CKP
MC IN
VD
HD
SO IN
SI IN
SWOT
ADRF
ANI 0
ANI 1
ANI 2
ANI 3
ANI 4
ANI 5
N.C
AGC CONT
HALL OUT
7 LINE TO 1 LINE DATA MULTIPLEXER
IP SG
AF DISP
VIDEO
MCO 8
AREA
XCS
SCK
SI
SO
XRST
ADI0
ADI5
ADCK
ADCV
IC803
A/D CONVERTER
V IN
CLK
B1-B6
(IC808 ⑦) 3.0V (+)
(IC808 ①) 1.5V (−)
IC808
AD REF
5V
3.0V
1.5V
ZOOM POSITION UNIT
CN604
CD-17 BOARD
(See Page 89)
ZP MATRIX
W603
CN801
TP
TW
ZOOM POSITION
3.0V (IC808 ⑦)
1.5V (IC808 ①)
CAMERA
DDS SI
DDS SCK
CAM 5V
Q830
SERVO/SYSTEM CONTROL (CO-2)
SYSTEM RESET
CN502
CN802
(LI-5)
DDS SI
DDS SCK
LOW CONTRAST
EVR CS
A/D EVR
Q809
Q810
IC802
AUTO FOCUS CPU
MACRO
IRIS GAIN
4.8V
FSPD 3
FSPD 2
FSPD 1
FSPD 0
CLK IN
AREA
XCS
SCK
MOSI
MISO
SYS RST
EVR CS
LOW CONTRAST
J STB
FOCUS N
FOCUS ∞
FOCUS FG
SS OUT
SS
ZOOM T
ZOOM W
AFSSW
DASTB
IRIS
HALL OS
HALL OUT
FOCUS SPEED
FOCUS REF
FOCUS N
FOCUS ∞
FOCUS FG
ZOOM TELE
ZOOM WIDE
CN801
FOCUS ∞
FOCUS N
S901
LENS BLOCK
IC804
EVR
LD
DI
CLK
IRIS
FOCUS SPEED
HALL OFFSET
MAX GAIN
TITLE A/D
CHARACTER
V SUB
AGC
N.C
Q816
BUFFER
CN803
J STB
MOSI
SCK
W
T
ZOOM
S901 ZOOM SW

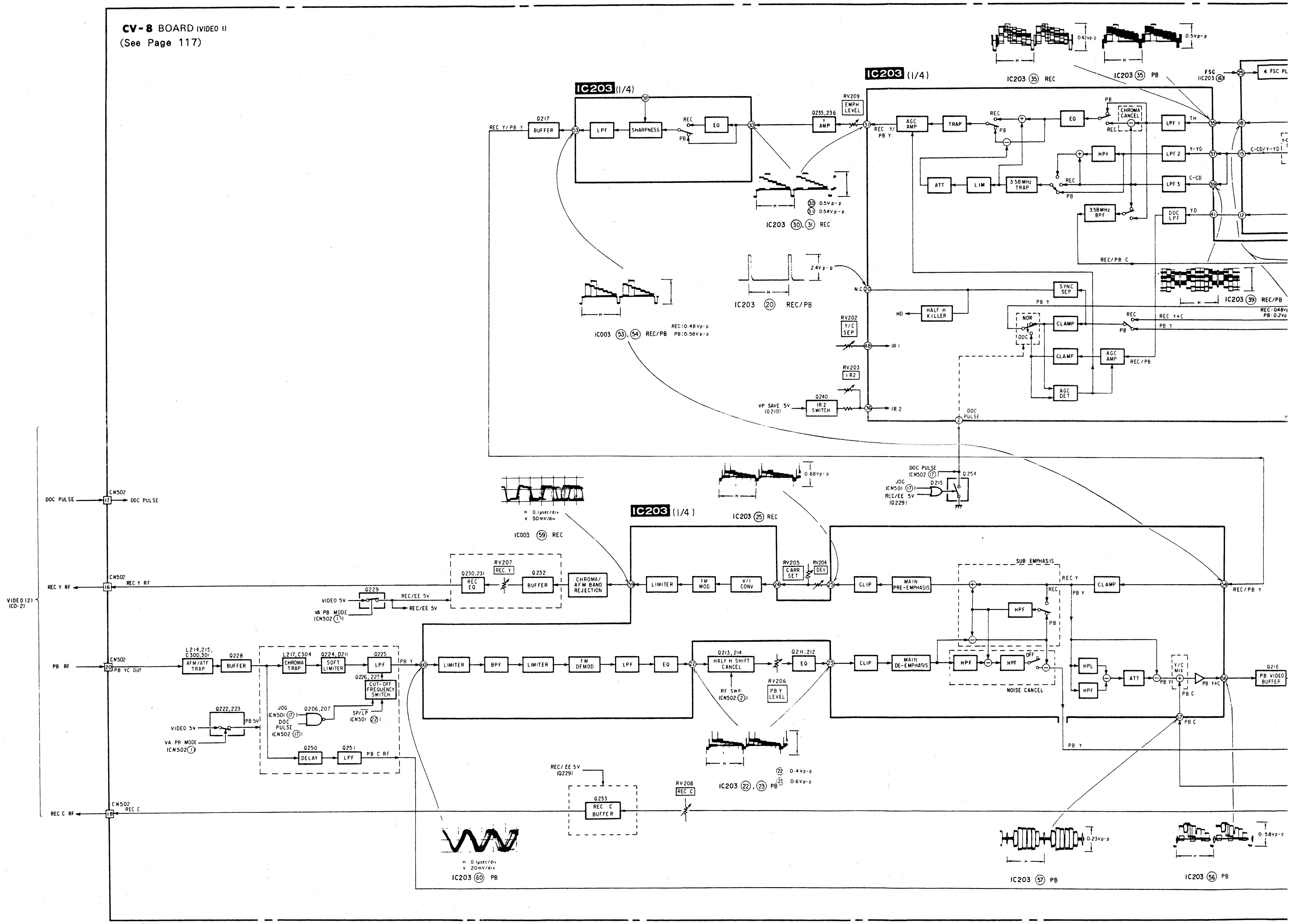

IC801
AF PROCESS
CKP
MC IN
VD
HD
SO IN
2 TO 1 ANALOG SW
SI IN
SWOT
ADRF
ANI 0
ANI 1
ANI 2
ANI 3
ANI 4
ANI 5
7 LINE TO 1 LINE DATA MULTIPLEXER
IP SG
AF DISP
VIDEO
MCO 8
AREA
XCS
SCK
SI
SC
XRST
ADI0
ADI5
ADCK
ADCV
IC803
VIN
CLK
A/D CONVERTER
B1-B6
IC808 ⑦ 13.0V
IC808 ① 11.5V
Q809
Q810
IC802
AUTO FOCUS CPU
MACRC
IRIS GAIN
CLK IN
AREA
XCS
SCK
MOSI
MISO
SYS RST
EVR CS
LOW CONTRAST
J STB
AFSSW
DASTB
FSPD 3
FSPD 2
FSPD 1
FSPD 0
4.8V
FOCUS N
FOCUS ∞
FOCUS FG
SS OUT
SS
ZOOM T
ZOOM W
IC804
EVR
LD
DI
CLK
IRIS
FOCUS SPEED
HALL OFFSET
MAX GAIN
TITLE A/D
CHARACTER
V SUB
AGC
N.C
Q816
BUFFER
IRIS CONT
IC807 (1/2)
IRIS DRIVE
IRIS
Q818, 822
BUFFER
HALL OS
HALL OUT
IC806 (1/2)
AF UNREG
FOCUS SPEED
FOCUS REF
Q819, 820, Q825, 826
FOCUS REG
IC805
Vcc
AUTO FOCUS MOTOR DRIVE
IN1
IN2
OUT 1
OUT 2
P GND
D GND
Q824
FG DETECT
IC806 (1/2)
IC807 (1/4)
HALL AMP
1.5V
(IC808 ①)
RV801
HALL
Q827, 828
HALL OS BUFFER
IC810
Q812
Q811
ZOOM MOTOR DRIVE
ZOOM TELE
ZOOM WIDE
CN801
W603
CD-17 BOARD
CN605
DRIVE(+)
CONT(+)
CONT(-)
HALL(+)
1.5V
H
M901
IRIS MOTOR
CN603
FOCUS N
FOCUS ∞
M904
FOCUS MOTOR
CN601
ZOOM W
ZOOM T
M905
ZOOM MOTOR
CN801
FOCUS ∞
FOCUS N
S902
LENS BLOCK
CN502
W502
CO-2 BOARD
(See Page 144)
W951
CN951
CN952
W
T
S901 ZOOM SWITCH
RC-29 BOARD
(See Page 152)
CN803
J STB
MOSI
SCK

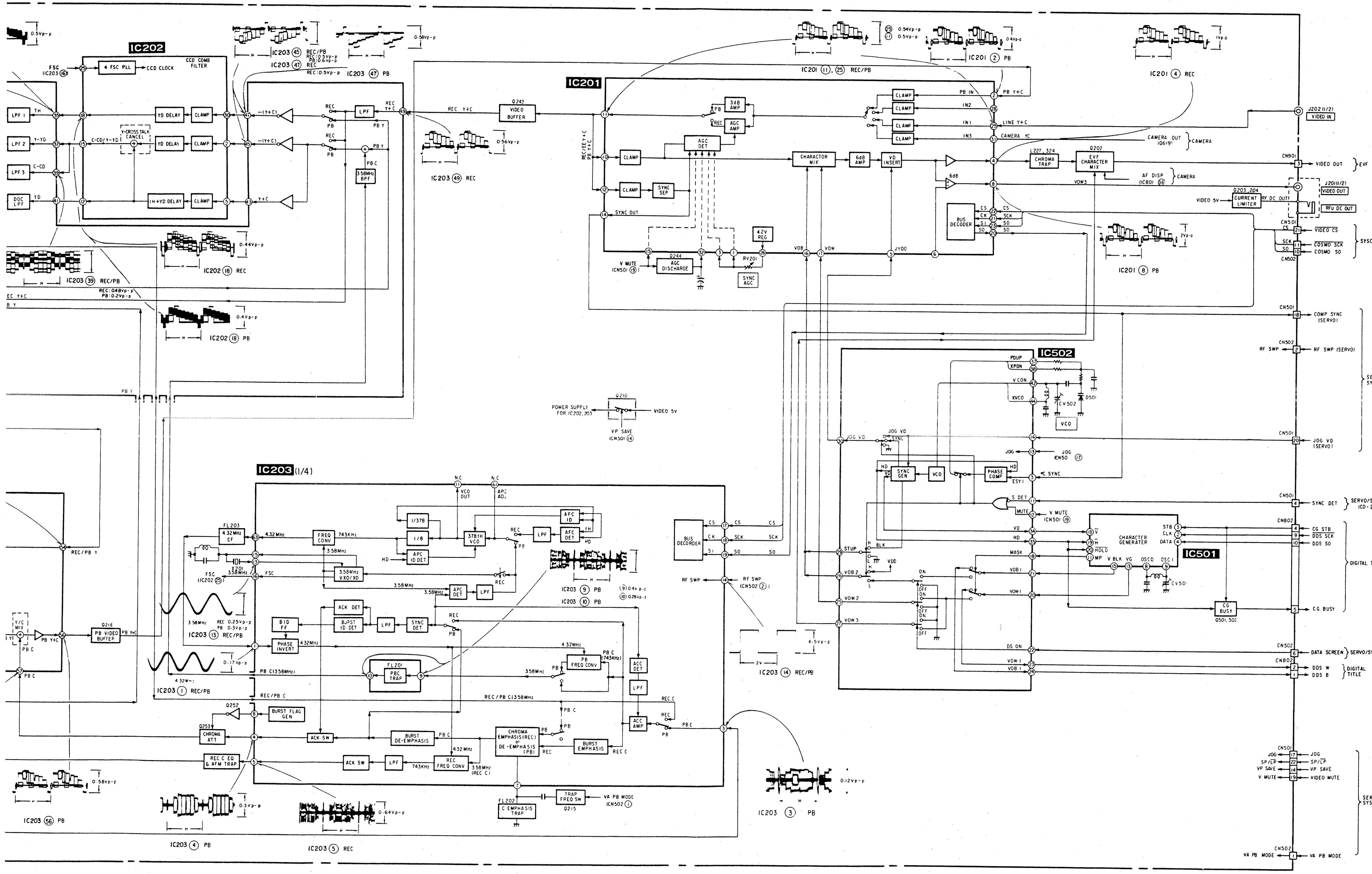
3-5. CAMERA FUNCTUIN BLOCK DIAGRAM


CK-19 BOARD
(See Page 127)
DK-4 BOARD
(See Page 127)
LI-5 BOARD
(See Page 129)
IC651
FEATURE CONTROL
(DDS CPU)
CG BUSY
CG STB
INT 1
DDS SO
DDS SCK
DDS SI
EVR CS
COSMO CS
TG STB
SRAM CS
TITLE CS
CMO 0
CMO 1
CMO 2
CMO 3
CMI 0
CMI 1
CMI 2
CMI 3
COM 4
VDD
CL 2
CL 1
RESET
LI PE
TEST
X1
X2
S659 TIME
S660 DATE(+)
S652 SHUTTER SPEED
S655 FOCUS
S653 BACK LIGHT
S654 WHITE BAL
W652
S962 EDIT SEARCH(−)
S691 EDIT SEARCH(+)
S694 ZERO MEM
S693 COUNTER RESET
Q651
S654
S652
Q653 SS 5V DET
Q655 SYSTEM CLOCK FREQUENCY SWITCH
RV651 SYSTEM CLOCK
Q656, 657 RESET
C655
C656
SS 5V
Q658 - 661 LITHIUM BATTERY PRE END DETECT
Q662, 665, Q660 AUTO LOCK SW
Q663 LOW CONT SW
CV651 CLOCK
X651 32.78kHz
4.5Vp-p
32.768kHz
IC651 (39)
W651
VD
LOW CON
DDS +B
LI 3V
LITHUIM BATTERY


D
:7)
IC651
FEATURE CONTROL (DDS CPU)
CG BUSY
CG STB
INT 1
DDS SO
DDS SCK
DDS SI
EVR CS
COSMO CS
TG STB
SRAM CS
TITLE CS
VDD
CL 2
CL 1
RESET
LI PE
TEST
CMO 0
CMO 1
CMO 2
CMO 3
CMI 0
CMI 1
CMI 2
CMI 3
COM 4
S659 TIME
S660 DATE(+)
S652 SHUTTER SPEED
S655 FOCUS
S653 BACK LIGHT
S654 WHITE BAL
Q662, 665, D660 AUTO LOCK SW
Q663 LOW CONT SW
Q651
S654
S652
Q653 SS 5V DET
Q655 SYSTEM CLOCK FREQUENCY SWITCH
RV651 SYSTEM CLOCK
Q656, 657 RESET
C655
C656
SS 5V
Q658 - 661 LITHIUM BATTERY PRE END DETECT
X1
X2
CV651 CLOCK
X651 32.78kHz
4.5Vp-p
32.768kHz
IC651 (39)
W651
LI-5 BOARD
(See Page 129)
VD
DDS +B
LI 3V
LOW CON
LITHUIM BATTERY
CV-8 BOARD (See Page 107)
W802
CN802
CN502
Q552
Q553
COSMO CS
COSMO SO
COSMO SCK
COSMO SI
SERVO/ SYSTEM CONTROL (CO-2)
LOW CONTRAST
A/D EVR
EVR CS
AUTO FOCUS
CG BUSY
CG STB
DDS SO
DDS SCK
DDS B
DDS W
VIDEO(1)
DDS SI
TG STB
A/D Y
CHRACTER
TR
TG
TB
C BLK
HD
CAMERA

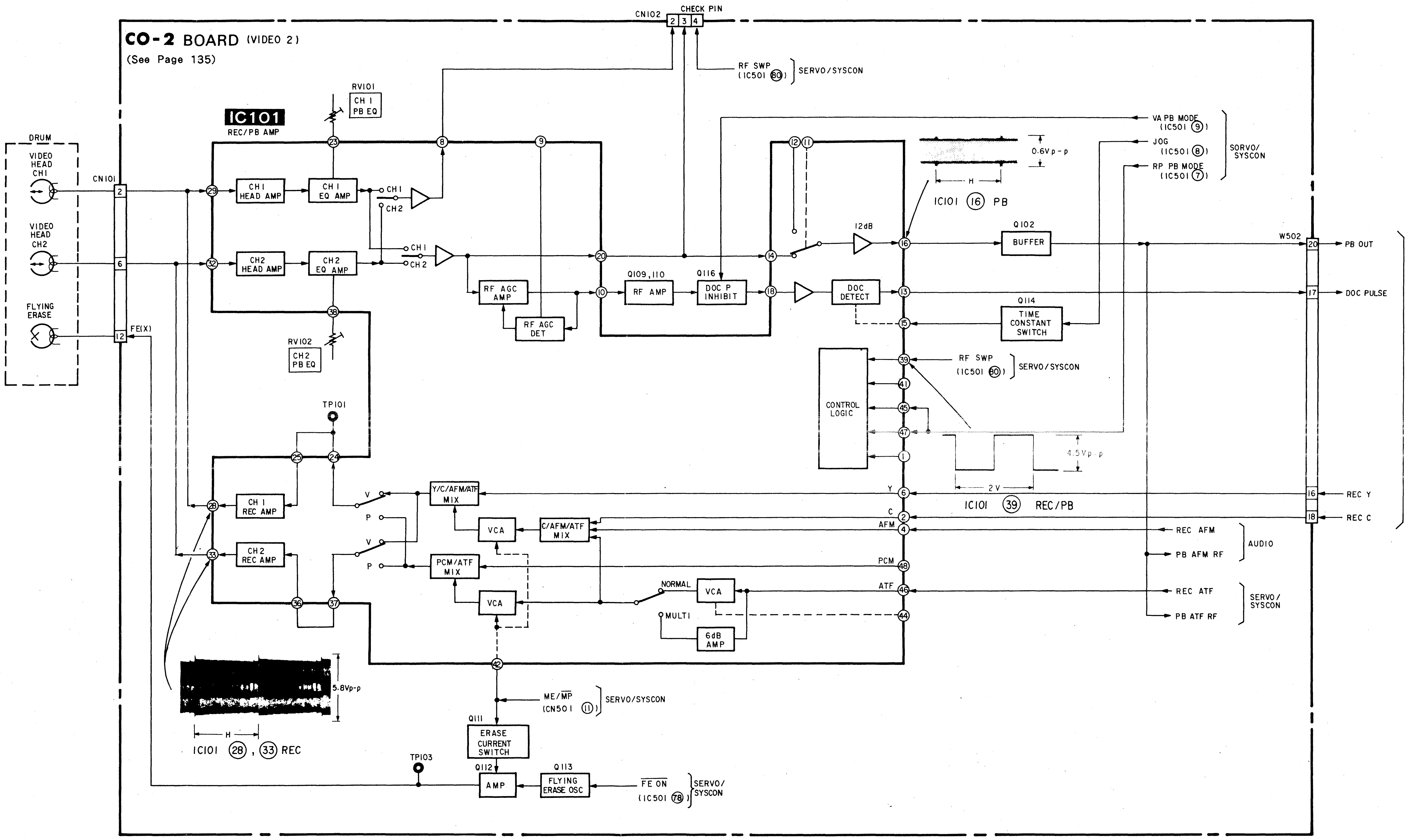
3-6. VIDEO BLOCK DIAGRAM(1)


CV-8 BOARD (VIDEO I)
(See Page 117)
IC203 (1/4)
IC203 (1/4)
IC203 (1/4)
REC Y/PB Y
Q217 BUFFER
LPF
SHARPNESS
EQ
REC
PB
Q235,236 Y AMP
RV209 EMPH LEVEL
REC Y/PB Y
AGC AMP
TRAP
CHROMA CANCEL
LPF 1
LPF 2
LPF 3
DOC LPF
HPF
ATT
LIM
3.58MHz TRAP
3.58MHz BPF
TH
Y-YD
C-CD
YD
C-CD/Y-YD
FSC IC203 (16)
4 FSC PL
IC203 (35) REC
IC203 (35) PB
0.42Vp-p
0.5Vp-p
IC203 (30),(31) REC
(30) 0.5Vp-p
(31) 0.54Vp-p
2.4Vp-p
IC203 (20) REC/PB
N.C.
HD
HALF H KILLER
SYNC SEP
NOR
DOC
Y/C
CLAMP
AGC AMP
AGC DET
REC/PB C
REC/PB
REC Y+C
PB Y
IC203 (39) REC/PB
REC: 0.48Vp-p
PB: 0.2Vp-p
IC003 (53),(54) REC/PB
REC: 0.48Vp-p
PB: 0.58Vp-p
RV202 Y/C SEP
IR1
RV203 IR2
VP SAVE 5V (Q210)
Q240 IR2 SWITCH
IR2
DOC PULSE
DOC PULSE CN502 (17)
JOG CN501 (17)
REC/EE 5V (Q229)
D215
Q254
0.68Vp-p
IC203 (25) REC
H 0.1μsec/div
V 50mV/div
IC003 (59) REC
CN502
DOC PULSE
REC Y RF
PB RF
REC C RF
VIDEO (2) (CO-2)
PB YC OUT
REC C
Q230,231 REC EQ
RV207 REC Y
Q232 BUFFER
CHROMA/AFM BAND REJECTION
LIMITER
FM MOD
V/I CONV
RV205 CARR SET
RV204 DEV
CLIP
MAIN PRE-EMPHASIS
SUB EMPHASIS
REC Y
CLAMP
REC/PB Y
Q229
VIDEO 5V
REC/EE 5V
VA PB MODE (CN502 (1))
L214,215, C300,301 AFM/ATF TRAP
Q228 BUFFER
L217,C304 CHROMA TRAP
Q224,D211 SOFT LIMITER
Q225 LPF
Q226,227 CUT-OFF FREQUENCY SWITCH
JOG (CN501 (17))
DOC PULSE (CN502 (17))
Q206,207
SP/LP (CN501 (22))
Q222,223
PB 5V
Q250 DELAY
Q251 LPF
PB C RF
PB Y
LIMITER
BPF
LIMITER
FM DEMOD
LPF
EQ
Q213,214 HALF H SHIFT CANCEL
Q211,212 EQ
RF SWP (CN502 (2))
RV206 PB Y LEVEL
CLIP
MAIN DE-EMPHASIS
HPF
HPF
OFF
NOISE CANCEL
HPL
HPF
ATT
Y/C MIX
PB Y+C
PB C
Q216 PB VIDEO BUFFER
REC/EE 5V (Q229)
Q233 REC C BUFFER
RV208 REC C
IC203 (22),(23) PB
(22) 0.4Vp-p
(23) 0.6Vp-p
H 0.1μsec/div
V 20mV/div
IC203 (60) PB
IC203 (57) PB
0.23Vp-p
IC203 (56) PB
0.58Vp-p

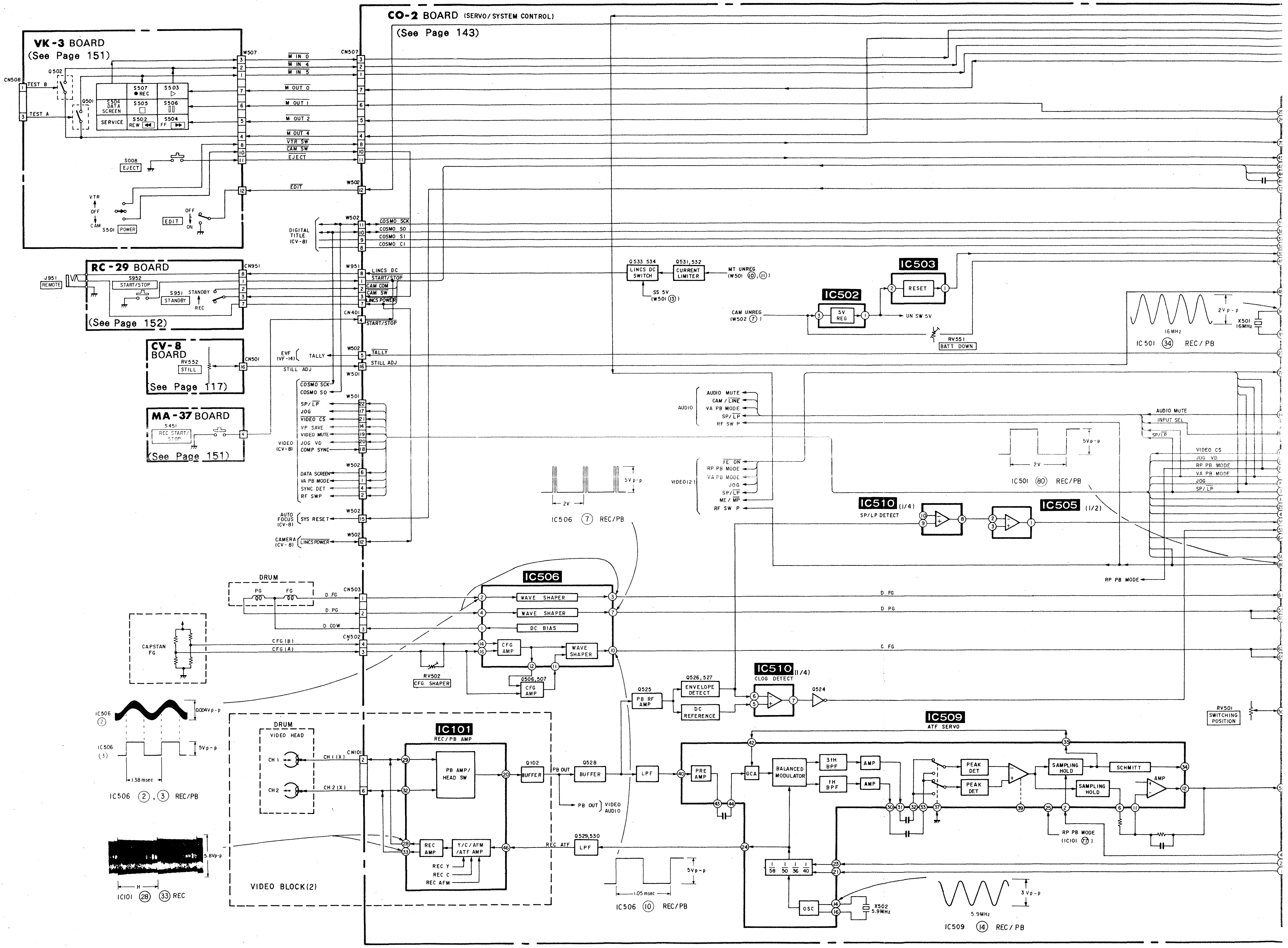

IC202
CCD COMB FILTER
4 FSC PLL
CCD CLOCK
FSC (IC203 ⑯)
LPF 1
LPF 2
LPF 3
DOC LPF
TH
Y-YD
C-CD
YD
C-CD/Y-YD
Y-CROSS TALK CANCEL
YD DELAY
CLAMP
1H+YD DELAY
−(Y+C)
Y+C
REC
PB
PB Y
PB C
LPF
REC Y+C
3.58MHz BPF
0.5Vp-p
IC203 ㊺ REC/PB
REC: 0.5Vp-p
PB: 0.6Vp-p
IC203 ㊼ REC
REC: 0.5Vp-p
IC203 ㊼ PB
0.58Vp-p
0.44Vp-p
IC202 ⑱ REC
IC203 ㊴ REC/PB
REC: 0.48Vp-p
PB: 0.2Vp-p
0.4Vp-p
IC202 ⑱ PB
IC201
Q243 VIDEO BUFFER
IC203 ㊾ REC
0.56Vp-p
REC/EE Y+C
PB Y+C
3dB AMP
AGC AMP
AGC DET
CLAMP
SYNC SEP
SYNC OUT
Q244 AGC DISCHARGE
V MUTE (CN501 ⑲)
4.2V REG
RV201
SYNC AGC
VOB
VOW
JYDO
CHARACTOR MIX
6dB AMP
VD INSERT
6dB
BUS DECODER
CS
CK
SI
SO
SCK
PB IN
IN2
IN1
IN3
PB Y+C
LINE Y+C
CAMERA YC
IC201 ⑪, ㉕ REC/PB
㉕ 0.54Vp-p
⑪ 0.5Vp-p
IC201 ② PB
0.4Vp-p
IC201 ④ REC
1Vp-p
IC201 ⑧ PB
2Vp-p
L227, 324 CHROMA TRAP
Q202 EVF CHARACTER MIX
VOW3
CAMERA OUT (Q619)
CAMERA
AF DISP (IC801 ㊱)
J202 (1/2) VIDEO IN
CN901
VIDEO OUT
EVF
J201 (1/2) VIDEO OUT
Q203, 204 CURRENT LIMITER
VIDEO 5V
RF DC OUT
RFu DC OUT
CN501
VIDEO CS
COSMO SCK
COSMO SO
CN502
SYSCON
COMP SYNC (SERVO)
RF SWP
RF SWP (SERVO)
SERVO/SYSCON
POWER SUPPLY FOR IC202, 203
Q210
VP SAVE (CN501 ⑭)
IC502
PDUP
XPDN
V CON
XVCO
CV502
D501
VCO
JOG VD
SYNC
JOG
JOG (CN50 ⑰)
HD
VD
SYNC GEN
PHASE COMP
ESY1
C SYNC
S DET
MUTE
JOG VD (SERVO)
SYNC DET
SERVO/SYSCON (CO-2)
STUP
BLK
VDD
VOB 2
VOW 2
VOW 3
ON
OFF
MASK
VOB 1
VOW 1
DS ON
IC501
CHARACTER GENERATER
STB
CLK
DATA
HOLD
MP
V BLK
VG
OSCO
OSC I
CV501
CG BUSY
Q501, 502
CN802
CG STB
DDS SCK
DDS SO
DIGITAL TITLE
DATA SCREEN
DDS W
DDS B
IC203 (1/4)
N.C
VCO OUT
APC ADJ
FL203 4.32MHz CF
4.32MHz
FREQ CONV
743KHz
1/378
1/8
APC ID DET
3781H VCO
AFC ID
AFC DET
1H
LPF
APC DET
3.58MHz VXO/XO
3.58MHz
X201 3.58MHz
FSC (IC202 ㉕)
IC203 ⑨ PB
IC203 ⑩ PB
⑨ 0.4Vp-p
⑩ 0.28Vp-p
3.58MHz
REC 0.25Vp-p
PB 0.3Vp-p
IC203 ⑬ REC/PB
0.17Vp-p
4.32MHz
IC203 ① REC/PB
ACK DET
BID FF
BURST ID DET
SYNC DET
PHASE INVERT
FL201 PBC TRAP
PB FREQ CONV
PB C (743KHz)
PB C (3.58MHz)
ACC DET
ACC AMP
REC/PB C
REC/PB C (3.58MHz)
REC C
Q252
BURST FLAG GEN
Q253 CHROMA ATT
ACK SW
BURST DE-EMPHASIS
CHROMA EMPHASIS (REC) or DE-EMPHASIS (PB)
BURST EMPHASIS
REC C EQ & AFM TRAP
REC FREQ CONV
3.58MHz (REC C)
FL202 C EMPHASIS TRAP
TRAP FREQ SW
Q215
VA PB MODE (CN502 ①)
BUS DECORDER
RF SWP (CN502 ②)
IC203 ⑭ REC/PB
4.5Vp-p
2V
IC203 ③ PB
0.12Vp-p
Y/C MIX
Q216 PB VIDEO BUFFER
REC/PB Y
IC203 ㊱ PB
0.58Vp-p
IC203 ④ PB
0.3Vp-p
IC203 ⑤ REC
0.64Vp-p
JOG
SP/LP
VP SAVE
V MUTE
VIDEO MUTE
VA PB MODE
SERVO/SYSCON

3-7. VI

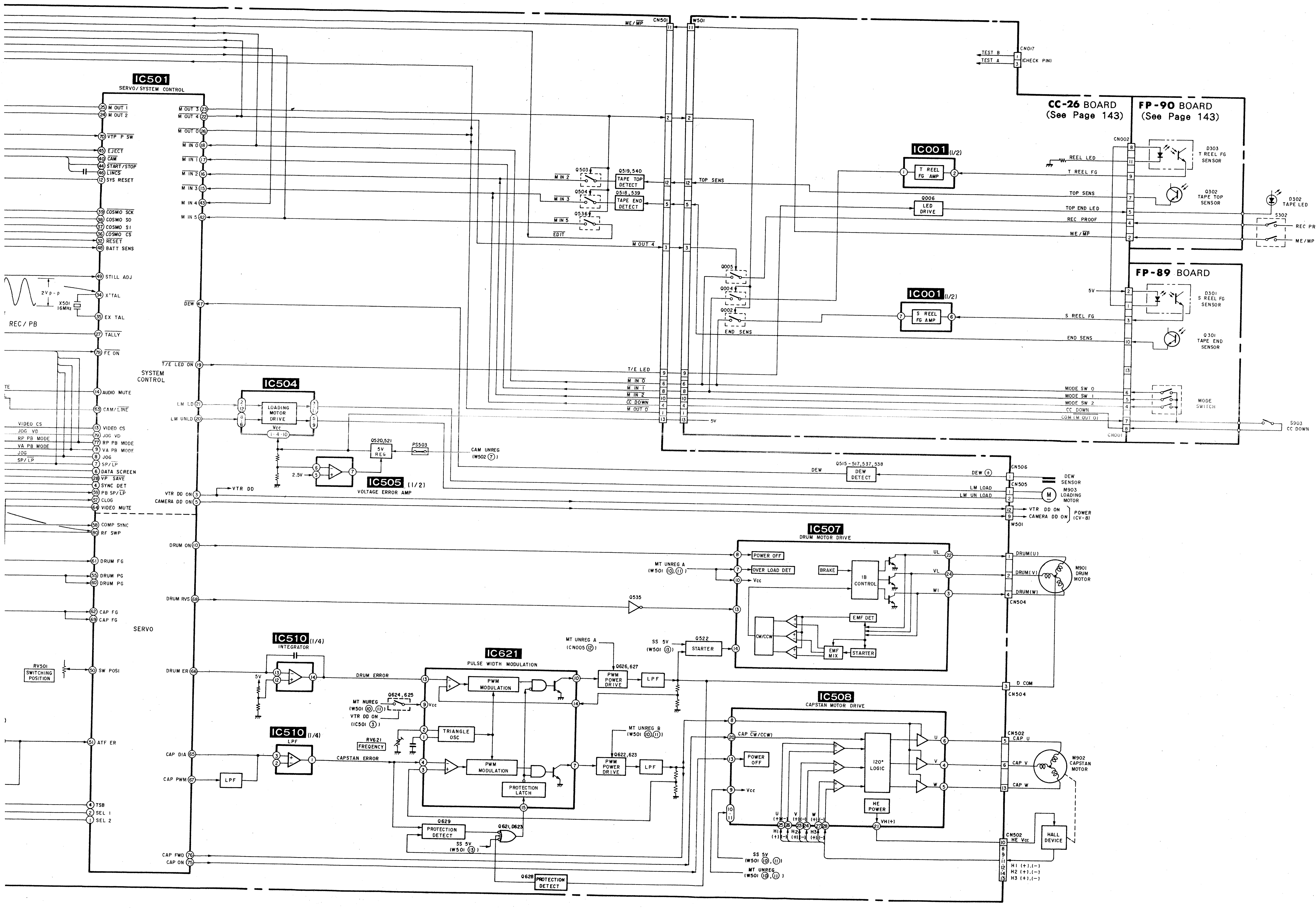
3-7. VIDEO BLOCK DIAGRAM(2)


CO-2 BOARD (VIDEO 2)
(See Page 135)
CN102
CHECK PIN
2 3 4
RF SWP
(IC501 80)
SERVO/SYSCON
IC101
REC/PB AMP
RV101
CH 1 PB EQ
DRUM
VIDEO HEAD CH1
VIDEO HEAD CH2
FLYING ERASE
CN101
FE(X)
CH1 HEAD AMP
CH1 EQ AMP
CH2 HEAD AMP
CH2 EQ AMP
CH1
CH2
RF AGC AMP
RF AGC DET
Q109, 110
RF AMP
Q116
DOC P INHIBIT
12dB
DOC DETECT
VA PB MODE (IC501 9)
JOG (IC501 8)
RP PB MODE (IC501 7)
SORVO/SYSCON
0.6Vp-p
H
IC101 16 PB
Q102
BUFFER
Q114
TIME CONSTANT SWITCH
W502
PB OUT
DOC PULSE
VIDEO(1) (CV-8)
RV102
CH2 PB EQ
TP101
CONTROL LOGIC
RF SWP
(IC501 80)
SERVO/SYSCON
4.5Vp-p
2V
IC101 39 REC/PB
CH 1 REC AMP
CH 2 REC AMP
V
P
Y/C/AFM/ATF MIX
VCA
C/AFM/ATF MIX
PCM/ATF MIX
NORMAL
MULTI
6dB AMP
Y
C
AFM
PCM
ATF
REC Y
REC C
REC AFM
PB AFM RF
AUDIO
REC ATF
PB ATF RF
SERVO/SYSCON
5.8Vp-p
H
IC101 28, 33 REC
ME/MP (CN501 11)
SERVO/SYSCON
Q111
ERASE CURRENT SWITCH
TP103
Q112
AMP
Q113
FLYING ERASE OSC
FE ON (IC501 78)
SERVO/SYSCON

3-8. SERVO, SYSTEM CONTROL BLOCK DIAGRAM



CO-2 BOARD (SERVO/SYSTEM CONTROL)
(See Page 143)
VK-3 BOARD
(See Page 151)
CN508
TEST B
TEST A
Q502
Q501
S507 ● REC
S503
S504 DATA SCREEN
S505
S506
SERVICE
S502 REW
S504 FF
S008 EJECT
VTR
OFF
CAM
S501 POWER
EDIT
OFF
ON
W507
CN507
M IN 0
M IN 4
M IN 5
M OUT 0
M OUT 1
M OUT 2
M OUT 4
VTR SW
CAM SW
EJECT
EDIT
W502
DIGITAL TITLE (CV-8)
COSMO SCK
COSMO SO
COSMO SI
COSMO CI
RC-29 BOARD
CN951
W951
J951 REMOTE
S952 START/STOP
S951 STANDBY
STANDBY
REC
(See Page 152)
LINCS DC
START/STOP
CAM COM
CAM SW
LINCS POWER
CN401
START/STOP
CV-8 BOARD
RV552 STILL
CN501
(See Page 117)
EVF (VF-14)
TALLY
STILL ADJ
W501
MA-37 BOARD
S451 REC START/STOP
(See Page 151)
COSMO SCK
COSMO SO
SP/LP
JOG
VIDEO CS
VP SAVE
VIDEO MUTE
VIDEO (CV-8)
JOG VD
COMP SYNC
DATA SCREEN
VA PB MODE
SYNC DET
RF SWP
AUTO FOCUS (CV-8)
SYS RESET
CAMERA (CV-8)
LINCS POWER
Q533, 534 LINCS DC SWITCH
Q531, 532 CURRENT LIMITER
MT UNREG (W501 ⑩, ⑪)
SS 5V (W501 ⑬)
IC503
RESET
IC502
5V REG
CAM UNREG (W502 ⑦)
UN SW 5V
RV551 BATT DOWN
2Vp-p
16MHz
X501 16MHz
IC501 ㉞ REC/PB
AUDIO
AUDIO MUTE
CAM/LINE
VA PB MODE
SP/LP
RF SW P
AUDIO MUTE
INPUT SEL
SP/LP
5Vp-p
2V
IC501 ⑳ REC/PB
VIDEO CS
JOG VD
RP PB MODE
VA PB MODE
JOG
SP/LP
VIDEO(2)
FE ON
RP PB MODE
VA PB MODE
JOG
SP/LP
ME/MP
RF SW P
5Vp-p
2V
IC506 ⑦ REC/PB
IC510 (1/4) SP/LP DETECT
IC505 (1/2)
RP PB MODE
DRUM
PG
FG
D FG
D PG
D COM
CN503
CN502
CAPSTAN FG
CFG (B)
CFG (A)
IC506
WAVE SHAPER
WAVE SHAPER
DC BIAS
CFG AMP
WAVE SHAPER
RV502 CFG SHAPER
Q506, 507 CFG AMP
D FG
D PG
C FG
Q525 PB RF AMP
Q526, 527 ENVELOPE DETECT
DC REFERENCE
IC510 (1/4) CLOG DETECT
Q524
RV501 SWITCHING POSITION
0.004Vp-p
IC506 ②
IC506 ③
5Vp-p
1.38msec
IC506 ②, ③ REC/PB
DRUM
VIDEO HEAD
CH 1
CH 2
CN101
CH 1 (X)
CH 2 (X)
IC101 REC/PB AMP
PB AMP/HEAD SW
Q102 BUFFER
PB OUT
Q528 BUFFER
PB OUT } VIDEO AUDIO
LPF
REC AMP
Y/C/AFM /ATF AMP
REC Y
REC C
REC AFM
REC ATF
Q529, 530 LPF
VIDEO BLOCK (2)
5.8Vp-p
H
IC101 ㉘ ㉝ REC
5Vp-p
1.05msec
IC506 ⑩ REC/PB
IC509 ATF SERVO
PRE AMP
GCA
BALANCED MODULATOR
3fH BPF
fH BPF
AMP
AMP
PEAK DET
PEAK DET
SAMPLING HOLD
SAMPLING HOLD
SCHMITT
AMP
1/58 1/50 1/36 1/40
OSC
X502 5.9MHz
RP PB MODE (IC101 ㉗)
3Vp-p
5.9MHz
IC509 ⑭ REC/PB


IC501
SERVO/SYSTEM CONTROL
M OUT 1
M OUT 2
VTP P SW
EJECT
CAM
START/STOP
LINCS
SYS RESET
COSMO SCK
COSMO SO
COSMO SI
COSMO CS
RESET
BATT SENS
STILL ADJ
X'TAL
2Vp-p
X501 16MHz
EX TAL
REC/PB
TALLY
FE ON
AUDIO MUTE
CAM/LINE
VIDEO CS
JOG VD
RP PB MODE
VA PB MODE
JOG
SP/LP
DATA SCREEN
VP SAVE
SYNC DET
PB SP/LP
CLOG
VIDEO MUTE
COMP SYNC
RF SWP
DRUM FG
DRUM PG
DRUM PG
CAP FG
CAP FG
SERVO
RV501 SWITCHING POSITION
SW POSI
ATF ER
TSB
SEL 1
SEL 2
M OUT 3
M OUT 4
M OUT 0
M IN 0
M IN 1
M IN 2
M IN 3
M IN 4
M IN 5
DEW
SYSTEM CONTROL
T/E LED ON
LM LD
LM UNLD
VTR DD ON
CAMERA DD ON
VTR DD
DRUM ON
DRUM RVS
DRUM ER
CAP DIA
CAP PWM
CAP FWD
CAP ON
ME/MP
CN501
W501
Q503
Q504
Q536
Q519,540 TAPE TOP DETECT
Q518,539 TAPE END DETECT
EDIT
M OUT 4
TOP SENS
IC504
LOADING MOTOR DRIVE
Vcc
Q520,521 5V REG
PS503
CAM UNREG (W502 ⑦)
2.5V
IC505 (1/2)
VOLTAGE ERROR AMP
T/E LED
M IN 0
M IN 1
M IN 2
CC DOWN
M OUT 0
5V
CN017
TEST B
TEST A
(CHECK PIN)
CC-26 BOARD (See Page 143)
FP-90 BOARD (See Page 143)
CN002
IC001 (1/2)
T REEL FG AMP
REEL LED
T REEL FG
TOP SENS
TOP END LED
REC PROOF
ME/MP
Q006 LED DRIVE
D303 T REEL FG SENSOR
Q302 TAPE TOP SENSOR
D302 TAPE LED
S302
REC PROOF
ME/MP
FP-89 BOARD
Q005
Q004
Q002
END SENS
IC001 (1/2)
S REEL FG AMP
5V
S REEL FG
END SENS
D301 S REEL FG SENSOR
Q301 TAPE END SENSOR
MODE SW 0
MODE SW 1
MODE SW 2
CC DOWN
COM (M OUT 0)
MODE SWITCH
S903 CC DOWN
CN001
Q515-517,537,538 DEW DETECT
DEW
DEW ⊕
CN506
DEW SENSOR
CN505
LM LOAD
LM UN LOAD
M903 LOADING MOTOR
VTR DD ON
CAMERA DD ON
POWER (CV-8)
W501
IC507
DRUM MOTOR DRIVE
MT UNREG A (W501 ⑩,⑪)
POWER OFF
OVER LOAD DET
Vcc
BRAKE
IB CONTROL
UL
VL
WL
DRUM(U)
DRUM(V)
DRUM(W)
M901 DRUM MOTOR
CN504
Q535
CW/CCW
EMF DET
EMF MIX
STARTER
SS 5V (W501 ⑬)
Q522 STARTER
MT UNREG A (CN005 ⑫)
IC510 (1/4)
INTEGRATOR
DRUM ERROR
IC621
PULSE WIDTH MODULATION
PWM MODULATION
Q626,627 PWM POWER DRIVE
LPF
D COM
CN504
Q624,625
MT NUREG (W501 ⑩,⑪)
VTR DD ON (IC501 ③)
RV621 FREQENCY
TRIANGLE OSC
IC510 (1/4)
LPF
CAPSTAN ERROR
PWM MODULATION
PROTECTION LATCH
MT UNREG B (W501 ⑩,⑪)
Q622,623 PWM POWER DRIVE
LPF
Q629 PROTECTION DETECT
Q621,Q623
SS 5V (W501 ⑬)
Q628 PROTECTION DETECT
IC508
CAPSTAN MOTOR DRIVE
CAP CW/CCW
POWER OFF
120° LOGIC
HE POWER
VH(+)
Vcc
U (+)(-)
V (+)(-)
W (+)(-)
H1 (+)(-)
H2 (+)(-)
H3 (+)(-)
SS 5V (W501 ⑩,⑪)
MT UNREG (W501 ⑩,⑪)
CN502
CAP U
CAP V
CAP W
M902 CAPSTAN MOTOR
CN502
HE Vcc
HALL DEVICE
H1 (+),(-)
H2 (+),(-)
H3 (+),(-)

3-9. SYSTEM CONTROL SECTION FUNCTION DESCRIPTION

The system control section consists of the following four microcomputers:

- Mode/mechanism control microcomputer CXP80116
- DDS microcomputer μPD7508BGB
- EVR microcomputer MC68HC05N4FU
- AF microcomputer MC68HC05C4FU

3-9-1. Mode/Mechanism Control Microcomputer CXP80116 (IC501 on CO-2 Board)

1. Function description

1) Power ON/OFF control
2) Key matrix read
   (Playback, record, fast-forward, rewind, pause, stop, data screen)
3) Reading of other keys
   (Power (camera/off/video), cassette eject)
4) Servos
5) Loading motor control
6) Error detection
   - Battery end/pre-end
   - Tape end
   - No cassette
   - Erasure prevention
   - DEW (condensation)
   - PAUSE release
   - CLOG (jamming)
   - L. motor emergency
   - Drum rotation
   - Drum phase
   - Reel rotation
   - Capstan rotation
   - Drum/capstan start
6) H.M.S. counter
7) JOG VD insertion
8) Execution of various modes

2. Abbreviated specifications

- 8-bit high-speed, highly integrated single chip microcomputer
- A/D converter, 8-bit, 8-channel
- Serial interface
- Time/counter
- Time base timer
- Vector interrupts
- High precision timing pattern generation function (high-speed output)
- PWM/DA gate pulse output, 12-bit, 2-channel
- High precision measurement function (FRC) for servo signals
- Power on reset function
- Sleep and stop functions
- External memory expansion mode, microcomputer mode
- ROM: 16 kbytes
- RAM: 352 kbytes
- Speed: 500 ns
- Process: C MOS
- Operating voltage: 4.5 to 5.5V
- Package: 80-pin flat package

3-9-2. DDS Microcomputer μPD7508BGB (IC651 on CK-19 Board)

1. Function description

1) Internal data communication control
2) Date/time measurement
3) LCD indication
4) Reading of key matrix
   (White balance, electronic shutter, edit search +/–, auto-lock, focus mode, counter reset, zero memory, title, store, color/mode, back light compensation, date/forward, time/set)

2. Operation modes

As shown in the table below, the operation mode is determined according to the position of the power switch (camera/off/video) and whether or not there is a main battery.

Mode	Main Battery	Power Switch	Microcomputer Power	Clock Mode	Main Functions
BACK UP	No	Camera/off/ video	Lithium battery	500 ms intermittent oscillation	• Backup of title and tape counter data • Clock count operation
	Yes	Off			
VTR ON	Yes	Video	SS 5V (main battery)	Continuous oscillation	• Serial communication with EVR and mode/mechanism control micro-computer • Indication to EVF • Acceptance of zero memory and counter reset keys
CAM ON	Yes	Camera	SS 5V (main battery)	Continuous oscillation	• VTR ON functions + all camera features • Indication control for white balance, focus, titles, electronic shutter, etc.

3-9-3. EVR Microcomputer MC68HC05N4FU (IC601 on CV-8 Board)

1. Function description

1) EVR control
2) Auto white balance control
3) Electronic shutter

3-9-4.

1. Fu
1) A
2) Pc
3) Zc

2. Au
(A
The hi
lumina
using e

3. O
The fre
2 MHz
digitall
the ev
inform.
finding
that:
Picture
frequen
increas

data

and
nicro-

and

amera

lance,
tc.

3-9-4. AF Microcomputer MC68HC05C4FU (IC802 on CV-8 Board)

1. Function description

1) AF control
2) Power focus
3) Zoom motor drive

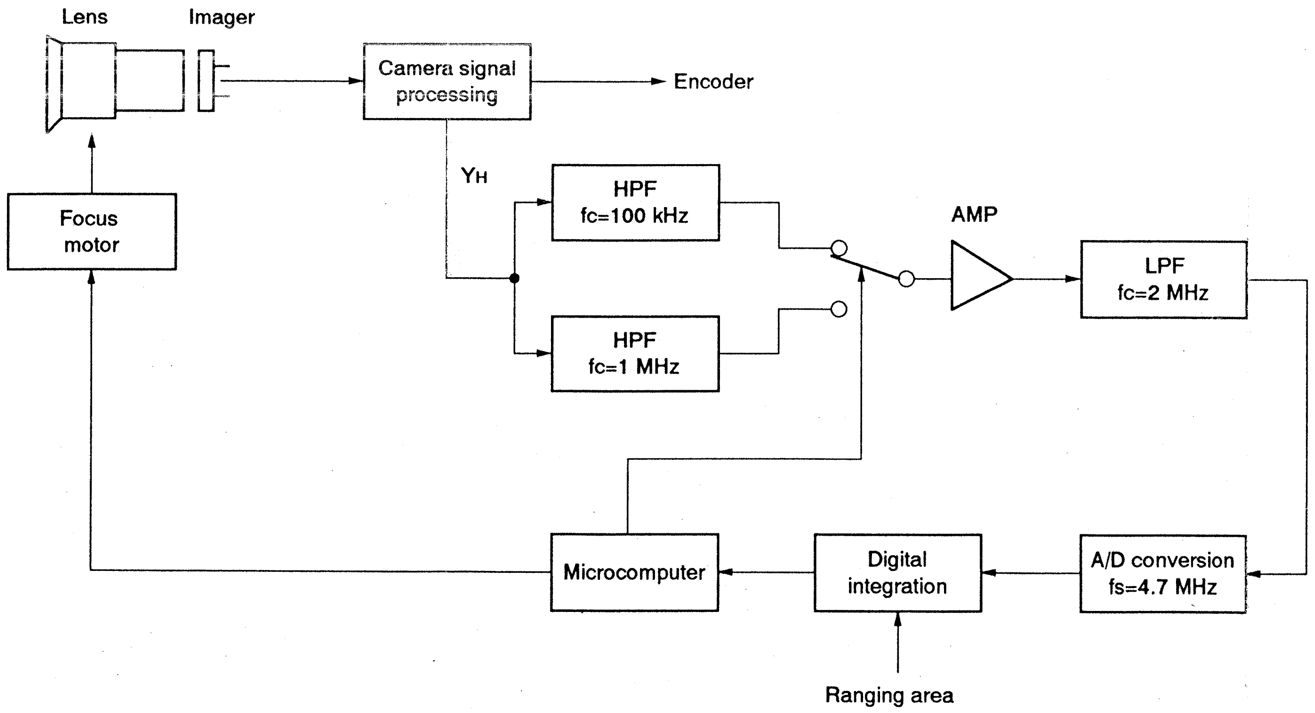
2. Auto focus system of this unit
(A-AF: Image processing system)

The high frequency components of the video signal (actually luminance signal)are microcomputer processed by TCL without using external sensors to control the focus.

3. Outline of operation

The frequency components from 100k to 2 MHz and from 1M to 2 MHz are extracted from the luminance signal Y, and these are digitally integrated for each field. This integration value is called the evaluation value. This evaluation value becomes the information for auto focusing, and the focus ring is controlled by finding the peaks in the evaluation values based on the concepts that:

Picture is in focus → edges of image become clearer → high frequency components of image increase → evaluation value increases



3-9-5. Mode/Mechanism Control — Video, Audio Block Interface

Signal	I/O	Pin No.	STOP	FF	REW	CUE	REVIEW	PB	PB・PAUSE	REC	REC・PAUSE
ME/$\overline{\text{MP}}$	O	Pin ⑪ of CN501 on CO-2 board	*1	*1	*1	*1	*1	*1	*1	*1	*1
SP/$\overline{\text{LP}}$	O	Pin ⑦ of IC501 on CO-2 board	H	H	H	*2	*2	*2	*2	H	H
JOG	O	Pin ⑧ of IC501 on CO-2 board	L	L	L	H	H	L	H	L	L
VA PB MODE	O	Pin ⑨ of IC501 on CO-2 board	L	L	L	H	H	H	H	L	L
VIDEO CS	O	Pin ⑬ of IC501 on CO-2 board	*3	*3	*3	*3	*3	*3	*3	*3	*3
AUDIO MUTE	O	Pin ⑭ of IC501 on CO-2 board	L	L	L	H	H	L	H	L	L
$\overline{\text{VP SAVE}}$ *16	O	Pin ㉘ of IC501 on CO-2 board	H	H	L	L	L	L	L	L	H
SYNC DET *14	O	Pin ㉙ of IC501 on CO-2 board	*4	*4	*4	*5	*5	*5	*5	*4	*4
COSMO SO	O	Pin ㊳ of IC501 on CO-2 board	*6	*6	*6	*6	*6	*6	*6	*6	*6
$\overline{\text{COSMO SCK}}$	O	Pin ㊴ of IC501 on CO-2 board	*7	*7	*7	*7	*7	*7	*7	*7	*7
CLOG	I	Pin (57) of IC501 on CO-2 board	H	*8	*8	*8	*8	*8	*8	H	H
COMP SYNC	I	Pin (58) of IC501 on CO-2 board	*9	*9	*9	*9	*9	*9	*9	*9	*9
PB SP/$\overline{\text{LP}}$	I	Pin (59) of IC501 on CO-2 board	L	*10	*10	*10	*10	L	L	L	L
CAM/$\overline{\text{LINE}}$	O	Pin (63) of IC501 on CO-2 board	*11	*11	*11	*11	*11	*11	*11	*11	*11
VIDEO MUTE *15	O	Pin (64) of IC501 on CO-2 board	L	L	L	L	L	L	L	L	L
RP PB MODE	O	Pin (77) of IC501 on CO-2 board	L	L	L	H	H	H	H	L	L
$\overline{\text{FE ON}}$	O	Pin (78) of IC501 on CO-2 board	H	H	H	H	H	H	H	L	H
JOG VD	O	Pin (79) of IC501 on CO-2 board	L	L	L	*12	*12	L	*12	L	L
RF SWP	O	Pin (80) of IC501 on CO-2 board	H	*13	*13	*13	*13	*13	*13	*13	*13

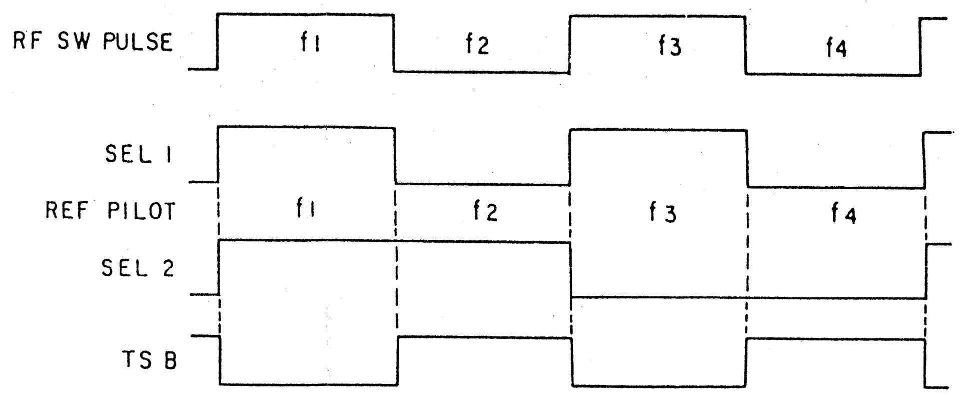
*1. "L" when using MP tape
*2. According to recorded mode of PB tape (SP: "H", LP: "L")
*3. Approx. 20 msec period "L" pulse. Chip select signal to video IC (IC201 and IC203 on CV-8 board)
*4. "H" when video signals are input.
*5. "H" when video signals are played back.
*6. 1V period "L" pulse train
*7. 1V period "L" pulse train
*8. Video head clog: "H", Normally: "L"
*9. Positive polarity composite sync signal
*10. SP mode recorded tape: "H", LP mode recorded tape: "L"
*11. "L" when the power switch is set to VIDEO position and "H" when CAMERA position.
*12. 1V period "H" pulse
*13. 2V period duty 50% pulse
*14. Detects a composite sync signal input at pin (58) of IC501.
*15. "H" when STOP to/from PB mode transition period.
*16. This signal switches a power (on/off) of video circuit IC202 and IC203.

3-9-6. Mode/Mechanism Control — Servo Peripheral Circuit Interface

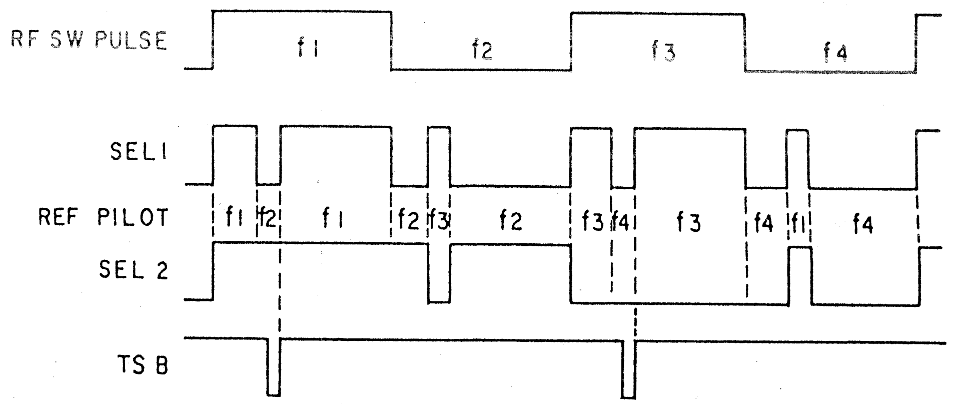
Signal	I/O	Pin No.	EJECTED	THREAD-ING	UN THREAD-ING	STOP	FF	REW	CUE	REVIEW	PB	PB • PAUSE	REC	REC • PAUSE
SEL 2 *17	O	Pin ① of IC501 on CO-2 board	L	L	L	L	H	H	*3	*3	*2	H	*1	H
SEL 1 *17	O	Pin ② of IC501 on CO-2 board	H	H	H	H	H	H	*3	*3	*2	L	*1	H
TS B *18	O	Pin ④ of IC501 on CO-2 board	L	L	L	L	L	L	*3	*3	*2	*16	*1	L
DRUM ON	O	Pin ⑩ of IC501 on CO-2 board	L	H	H	L	H	H	H	H	H	H	H	H
SW POSI	I	Pin ㊿ of IC501 on CO-2 board	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5
ATF ERROR	I	Pin (51) of IC501 on CO-2 board	*6	*6	*6	*6	*7	*7	*7	*7	*7	*7	*6	*6
DRUM PG	I	Pins (55) and (60) of IC501 on CO-2 board	L	*8	*8	L	*8	*8	*8	*8	*8	*8	*8	*8
DRUM FG	I	Pin (61) of IC501 on CO-2 board	H	*9	*9	H	*9	*9	*9	*9	*9	*9	*9	*9
CAP FG	I	Pins (62) and (69) of IC501 on CO-2 board	H/L	PULSE	PULSE	H/L	*10	*10	*10	*10	*10	H/L	*10	H/L
CAP D/A	I	Pin (65) of IC501 on CO-2 board	L	*11	*11	L	*11	*11	*11	*11	*11	L	*11	L
DRUM D/A	O	Pin (66) of IC501 on CO-2 board	L	*12	*12	L	*12	*12	*12	*12	*12	*12	*12	*12
CAP PWM	O	Pin (67) of IC501 on CO-2 board	L	*13	*13	L	*13	*13	*13	*13	*13	L	*13	L
DRUM FWD/REV	O	Pin (68) of IC501 on CO-2 board	*14	*14	*14	*14	*14	*14	*14	*14	*14	*14	*14	*14
CAP ON	O	Pin (75) of IC501 on CO-2 board	L	H	H	L	H	H	H	H	H	L	H	L
CAP FWD	O	Pin (76) of IC501 on CO-2 board	L	L	H	L	H	L	H	L	H	L	H	L
RF SWP	O	Pin (80) of IC501 on CO-2 board	H	*15	*15	H	*15	*15	*15	*15	*15	*15	*15	*15

*1. See timing chart 1.
*2. See timing chart 2.
*3. See timing chart 3.
*4. 1V period "H" pulse
*5. DC voltage set with RV501 (Switching position adjustment)
*6. Approx. 2.3 Vdc constant
*7. ATF error voltage
*8. 2V period "H" pulse
*9. 1.4 msec period pulse
*10. Pulses of frequecy in proportion to tape speed
*11. "H" pulse output when rising or falling edges of the capstan, Normaly: "HIZ"
*12. 6 msec period PWM signal (tri-state) of "H", "L" and "HIZ" (2.5 Vdc)
*13. 64 µsec period PWM signal
*14. Normally: "H"
*15. 2V period duty 50% pulse
*16. V period "L" pulse
*17. ATF REF PILOT signal frequency (f_1 to f_4) selecting signal
*18. ATF AGC timing control signal

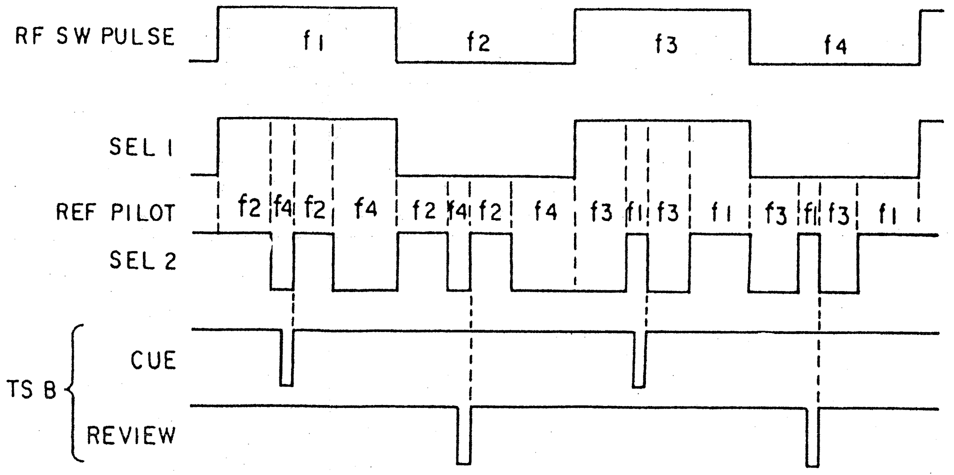
Timing chart 1 (REC)


RF SW PULSE
f1
f2
f3
f4
SEL 1
REF PILOT
f1
f2
f3
f4
SEL 2
TS B

Timinfg chart 2 (PB)


RF SW PULSE
f1
f2
f3
f4
SEL 1
REF PILOT
f1
f2
f1
f2
f3
f2
f3
f4
f3
f4
f1
f4
SEL 2
TS B

Timing chart 3 (CUE/REVIEW)


RF SW PULSE
f1
f2
f3
f4
SEL 1
REF PILOT
f2
f4
f2
f4
f2
f4
f2
f4
f3
f1
f3
f1
f3
f1
f3
f1
SEL 2
TS B
CUE
REVIEW

3-9-7. Mode/Mechanism Control — Mode/Mechanism Control Peripheral Circuit Interface

Signal	I/O	Pin No.	I/O Level
VTR DD ON	O	Pin ③ of IC501 on CO-2 board	VTR DC/DC converter on/off signal "H" when power of video or camera is turned on.
CAM DD ON	O	Pin ⑤ of IC501 on CO-2 board	Camera DC/DC converter on/off signal "H" when power of camera is turned on.
DATA SCREEN	O	Pin ⑥ of IC501 on CO-2 board	"H" when data screen is turned on.
SP/$\overline{\text{LP}}$	O	Pin ⑦ of IC501 on CO-2 board	"H" during SP recording mode or playback of tape recorded in SP mode
$\overline{\text{SYS RESET}}$	O	Pin ⑫ of IC501 on CO-2 board	Reset signal of AF microcomputer (IC802 on the CV-8 board) Normally: "H" ("L" pulse when power of video or camera is turned on.)
$\overline{\text{M IN 3}}$	I	Pin ⑮ of IC501 on CO-2 board	No key matrix input signal: "H" (Other: "L")
$\overline{\text{M IN 2}}$	I	Pin ⑯ of IC501 on CO-2 board	No key matrix input signal: "H" (Other: "L")
$\overline{\text{M IN 1}}$	I	Pin ⑰ of IC501 on CO-2 board	No key matrix input signal: "H" (Other: "L")
$\overline{\text{M IN 0}}$	I	Pin ⑱ of IC501 on CO-2 board	No key matrix input signal: "H" (Other: "L")
T/E LED	O	Pin ⑲ of IC501 on CO-2 board	Tape top/end LED lighting control signal STOP/PB/REC/PB·PAUSE/REC·PAUSE/REVIEW: 170 msec period "H" pulse, CUE: 22 msec period "H" pulse, FF/REW: 4 msec period "H" pulse, EJECT or CASSETTE IN detecting: 22 msec period "H" pulse
UNLD	O	Pin ⑳ of IC501 on CO-2 board	Normally: "L" ("H" in Unthreading, "H" pulse is output in Mechanical mode transition)
LD	O	Pin ㉑ of IC501 on CO-2 board	Normally: "L" ("H" in Threading, "H" pulse is output in Mechanical mode transition)
M OUT 4	O	Pin ㉒ of IC501 on CO-2 board	Key matrix output signal 20 msec period "H" pulse
M OUT 3	O	Pin ㉓ of IC501 on CO-2 board	Key matrix output signal 20 msec period "H" pulse
$\overline{\text{M OUT 2}}$	O	Pin ㉔ of IC501 on CO-2 board	Key matrix output signal 20 msec period "L" pulse
$\overline{\text{M OUT 1}}$	O	Pin ㉕ of IC501 on CO-2 board	Key matrix output signal 20 msec period "L" pulse
$\overline{\text{M OUT 0}}$	O	Pin ㉖ of IC501 on CO-2 board	Key matrix output signal 20 msec period "L" pulse
$\overline{\text{TALLY}}$	O	Pin ㉗ of IC501 on CO-2 board	TALLY LED control signal. Normally: "H" ("L" during REC mode when power switch is set to CAMERA position)

Signal	I/O	Pin No.	I/O Level
$\overline{\text{RESET}}$	I	Pin ㉜ of IC501 on CO-2 board	Normally: "H" (Reset: "L")
$\overline{\text{COSMO CS}}$	I	Pin ㊱ of IC501 on CO-2 board	1V period "L" pulse (18 msec period in VTR mode)
COSMO SI	I	Pin ㊲ of IC501 on CO-2 board	1V period "H" pulse train (18 msec period in VTR mode)
COSMO SO	O	Pin ㊳ of IC501 on CO-2 board	1V period "L" pulse train (18 msec period in VTR mode)
$\overline{\text{COSMO SCK}}$	I/O	Pin ㊴ of IC501 on CO-2 board	1V period "L" pulse train (18 msec period in VTR mode)
$\overline{\text{CAM P SW}}$	I	Pin ㊵ of IC501 on CO-2 board	"L" when power switch (S501 on the VK-3 board) is set to CAMERA position and standby switch (S951 on the RC-29 board) to STANDBY position.
$\overline{\text{M IN 5}}$	I	Pin ㊷ of IC501 on CO-2 board	No key matrix input signal: "H" (Other: "L")
$\overline{\text{M IN 4}}$	I	Pin ㊸ of IC501 on CO-2 board	No key matrix input signal: "H" (Other: "L")
$\overline{\text{START/STOP}}$	O	Pin ㊹ of IC501 on CO-2 board	Normally: "H" ("L" when start/stop button (S952 on the RC-29 board or S451 on the MA-37 board) is pressed.)
$\overline{\text{EJECT}}$	I	Pin ㊺ of IC501 on CO-2 board	Normally: "H" ("L" when EJECT switch (S508 on VK-3 board) is pressed.)
$\overline{\text{LINCS}}$	I	Pin ㊻ of IC501 on CO-2 board	Normally: "H" ("L" pulse when power button of the remote controller is turned on.)
$\overline{\text{DEW}}$	I	Pin ㊼ of IC501 on CO-2 board	Normally: "H" ("L" when dew)
BATT DOWN	I	Pin ㊽ of IC501 on CO-2 board	Main battery voltage (CAM UNREG) is divided by RV551 (battery down adjustment) and input. For detecting battery end/pre-end.
STILL ADJ	I	Pin ㊾ of IC501 on CO-2 board	DC voltage set by RV552 (STILL adjustment) on the CV-8 board is input.
CLOG	I	Pin (57) of IC501 on CO-2 board	Normal playback: "L" ("H" when PB RF signal is not reproduced due to head clog, etc..
PB SP/$\overline{\text{LP}}$	I	Pin (59) of IC501 on CO-2 board	Recording speed mode detection signal in FF, REW, CUE or REVIEW mode ("H" in SP mode, "L" in LP mode)
$\overline{\text{VTR P SW}}$	I	Pin (70) of IC501 on CO-2 board	"Normally: "H" ("L" when power switch (S501 on the VK-3 board) is set to video position.)

3-9-8. Mode/Mechanism Control — Mechanism Block Interface

Signal	I/O	Pin No.	I/O Level
S REEL FG	I	Pin ③ of CN001 on CC-26 board	Pulse (Approx. 4 Vp-p) that is generated by S-reel rotation. It is approx. 1 sec period in REC/PB (SP) mode.
MODE SW 2	I	Pin ④ of CN001 on CC-26 board	Pins are connected to mode switch for mechanical position detection.
MODE SW 1	I	Pin ⑤ of CN001 on CC-26 board	
MODE SW 0	I	Pin ⑥ of CN001 on CC-26 board	
$\overline{\text{M OUT 0}}$ (COM)	O	Pin ⑦ of CN001 on CC-26 board	
CC DOWN	I	Pin ⑧ of CN001 on CC-26 board	It is connected to cassette compartment down detection (CC DOWN) switch. When cassette compartment comes down, connection between Pins ⑧ and ⑦ are short-circuited. When cassette compartment comes up, connection between Pins ⑧ and ⑦ is open.
$\overline{\text{MOUT 0}}$ (COM)	O	Pin ⑦ of CN001 on CC-26 board	
END SENS	I	Pin ⑩ of CN001 on CC-26 board	Normally: "L" ("H" pulse is output in tape end or cassette unloaded)
13/10	I	Pin ⑪ of CN001 on CC-26 board	Not used
MP HG	I	Pin ⑫ of CN001 on CC-26 board	"H" pulse (20 msec period) is output when normal MP tape is used.
ME/$\overline{\text{MP}}$	I	Pin ② of CN002 on CC-26 board	"L" in MP tape ("H" pulse (20 msec period) in cassette unloaded)
REC PROOF	I	Pin ④ of CN002 on CC-26 board	"L" when recording possible cassette is loaded. "H" pulse (20 msec period) is output, when recording inhibiting cassette is loaded.
TOP END LED	O	Pin ⑤ of CN002 on CC-26 board	"L" pulse (approx. 1 Vp-p) (pulse period is changed from 12 to 170 msec according to operation mode.)
TOP SENS	I	Pin ⑦ of CN002 on CC-26 board	Normally: "L" ("H" pulse is output in tape top or cassette unloaded)
T REEL FG	I	Pin ⑨ of CN002 on CC-26 board	Pulse (Approx. 4 Vp-p) that is generated by T-reel rotation, in REC/PB (SP) mode, it is approx. 1 sec period.

	EJECTED	THREADING UNTHREADING	STOP	REC/PB/FF/ REW/CUE/ REVIEW/PAUSE
MODE SW 2 (④−⑦)	○	○	×	○
MODE SW 1 (⑤−⑦)	×	○	○	×
MODE SW 0 (⑥−⑦)	×	×	○	○

×……Open
○……Short

3-9-9. DDS Microcomputer (IC651 on CK-19 Board) — Peripheral Circuit Interface

PIN No.	Signal Name	I/O	Function and I/O Level
1	CMI 0	I	Key matrix input signal. Normally "H". When key input, "L" pulse for 18 ms (VTR mode) or 1V period (camera mode).
2	CMI 1	I	
3	CMI 2	I	
4	CMI 3	I	
5	$\overline{\text{CMO 0}}$	O	Key matrix output signal. "L" pulse for 18 ms (VTR mode) or 1V period (camera mode).
6	$\overline{\text{CMO 1}}$	O	
7	$\overline{\text{CMO 2}}$	O	
8	$\overline{\text{CMO 3}}$	O	
15	RESET	I	Normally "L".
16	CL 1	I	System clock oscillation pin. • Video power ON or camera power ON Continuous oscillation (oscillation frequency approx. 320 kHz) • Power OFF or backed up by lithium battery 500 ms intermittent oscillation (oscillation frequency approx. 70 kHz)
18	CL 2	O	
19	INT 1	I	Interrupt input by camera VD. VTR mode: "H" Camera mode: 1V period "H" pulse
21	$\overline{\text{DDS SCK}}$	I/O	Serial communication·serial clock I/O. V period "L" pulse train.
22	DDS SO	O	Serial communication·data output. V period "H" pulse train.
24	DDS SI	I	Serial communication·data input. V period "L" pulse train.
25	CG BUSY	I	Busy signal input from character generator. V period "H" pulse train.
26	VTR PWR	I	SS 5V power detection. "H" while power ON.
27	LI PE	I	Lithium battery pre-end detection. Normally "H". "L" when lithium battery voltage drops.
28	$\overline{\text{TEST}}$	I	Test mode input. Normally "H".
29	CG STB	O	Strobe signal for character generator. 1V period "H" pulse train.
30	$\overline{\text{COSMO CS}}$	O	Chip select signal to servo/system control microcomputer (IC501 on CO-2 board). 1V period "L" pulse.
31	$\overline{\text{EVR CS}}$	O	Chip select signal to EVR microcomputer (IC601 on CV-8 board). 1V period "L" pulse.
32	CMO 4	O	Key matrix output signal. "H" pulse for 18 ms (VTR mode) or 1V period (camera mode).
34	TITLE CS	O	Chip select signal to title controller Not used.
35	SRAM CS	O	Chip select signal to static RAM Not used.
36	TG STB	O	Strobe signal to timing generator (CV-8 board, DT-73 board). Camera mode: 1V period "H" pulse. VTR mode: "L"
38	X1		Crystal oscillation circuit for clock. Oscillation frequency of 32.768 kHz.
39	X2		

3-9-10. EVR Microcomputer (IC601 on CV-8 Board) — Peripheral Circuit Interface

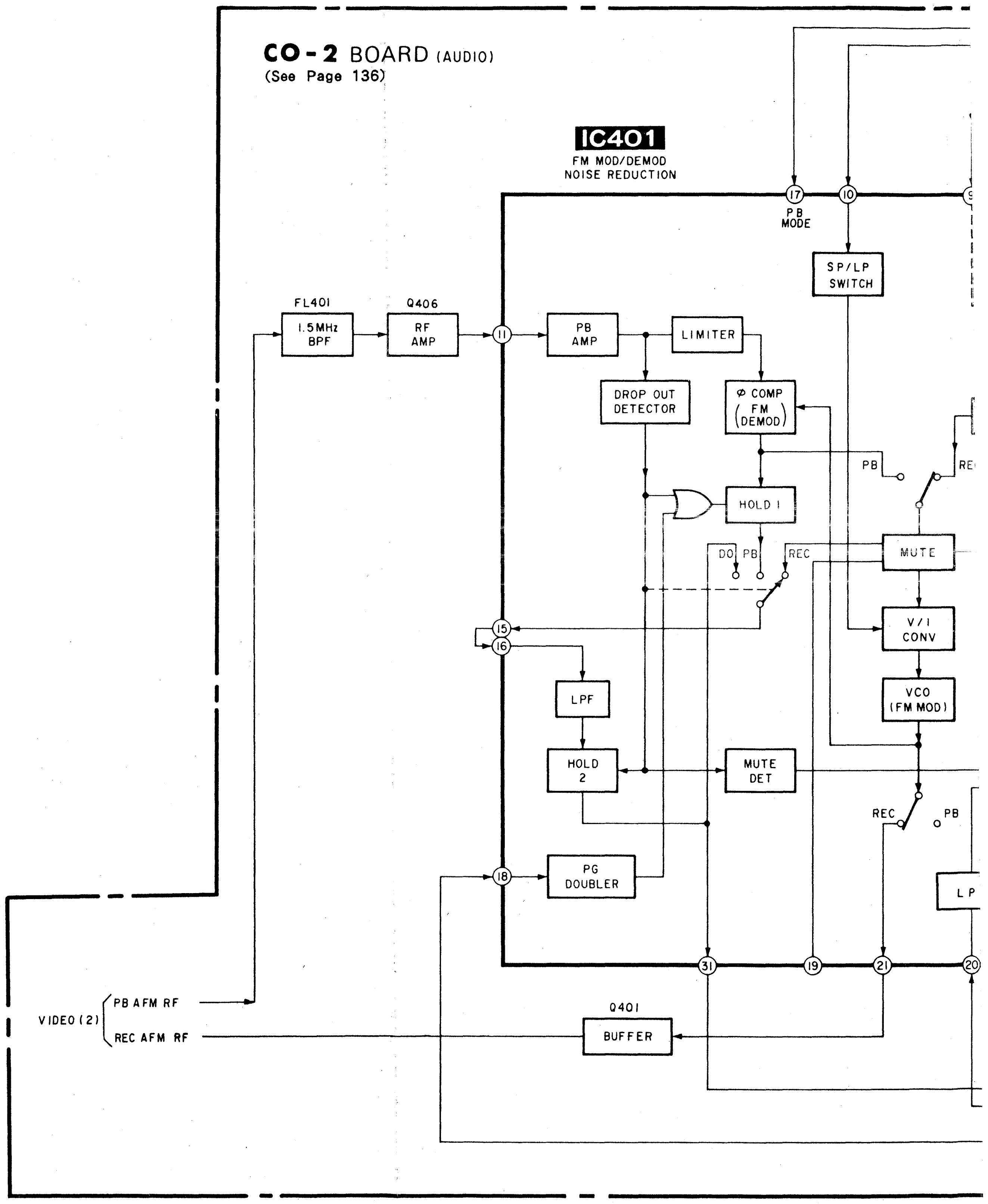
PIN No.	Signal Name	I/O	Function and I/O Level
1	–		–
2	DA SSW	O	"H" only during communication with serial switching D/A converter. V period "H" pulse.
3	$\overline{\text{EVR SCLK}}$	O	Serial clock output. V period "L" pulse train.
4	EVR SI	I	Serial data input. V period "H" pulse train.
5	EVR SO	O	Serial data output. V period "L" pulse train.
6	$\overline{\text{EVR CS}}$	I	Communication request from DDS. V period "L" pulse.
7	L IN	I	LINCS input. L: 0, H: 1. V period "H" pulse train.
8	L OUT	O	LINCS output. L: 0, H: 1. V period "H" pulse train.
9	$\overline{\text{CAM ADJ}}$	I	Normal/Adjust selection. Normally "H". "L" during adjustment.
10	NC	–	NC
11	DDS SSW	O	DDS serial selection. V period "L" pulse.
12, 13	LD	O	Data load instruction to EVR (IC608, IC609). V period "H" pulse.
14	BL	–	"L" for back light compensation ON.
15	IN/OUT	I	Indoors/outdoors mode discrimination input. "H": indoors, "L": outdoors.
16	–		
17	Vpp		EEPROM write voltage supply: connected to GND.
18			GND
19	–	–	
20	PAL/$\overline{\text{NTSC}}$	I	Broadcast system selection. L: NTSC, H: PAL.
21	GND		–
22	GND		–
23	GND		–
24, 25	GND		–
26	GND	–	–
27	GND	–	–
28	CAM 5V	I	Camera power on monitoring. L: CAM OFF, H: CAM ON.
29	AW IN	I	AWB A/D timer stop. Pattern drive interrupt. Normally 2V period pulse.
30	AW ADJ	O	AWB preset data fetch. Normally "L". "H" during auto white balance adjustment.
31	–	–	NC
32	DPCS	–	–
33	–	–	–
34	S3SW	O	AWB measurement signal selection. 3V period "H" pulse.
35	S2SW	O	AWB measurement signal selection. 3V period "H" pulse.
36	DISCHG	O	Capacitor reset pulse for timer measurement lamp voltage generation. V period "H" pulse.
37	–	–	–
38	S1SW	O	AWB measurement signal selection. 3V period "H" pulse.
39	–	–	–
40	OSC2	O	Built-in inverter output for oscillation. Oscillation frequency: 4 MHz.
41	OSC1	I	Built-in inverter input for oscillation.
42	VDD		Connected to EVER 5V.
43	–		–
44	$\overline{\text{RESET}}$		Normally "H". "L" when reset.
45	$\overline{\text{IRQ}}$		Connected to $\overline{\text{EVR CS}}$ signal. V period "L" pulse.
46	–	–	EVER 5V
47	–	–	EVER 5V
48	$\overline{\text{A/D EN}}$	O	1-bit A/D converter operation ON/OFF output for titler. Not used.

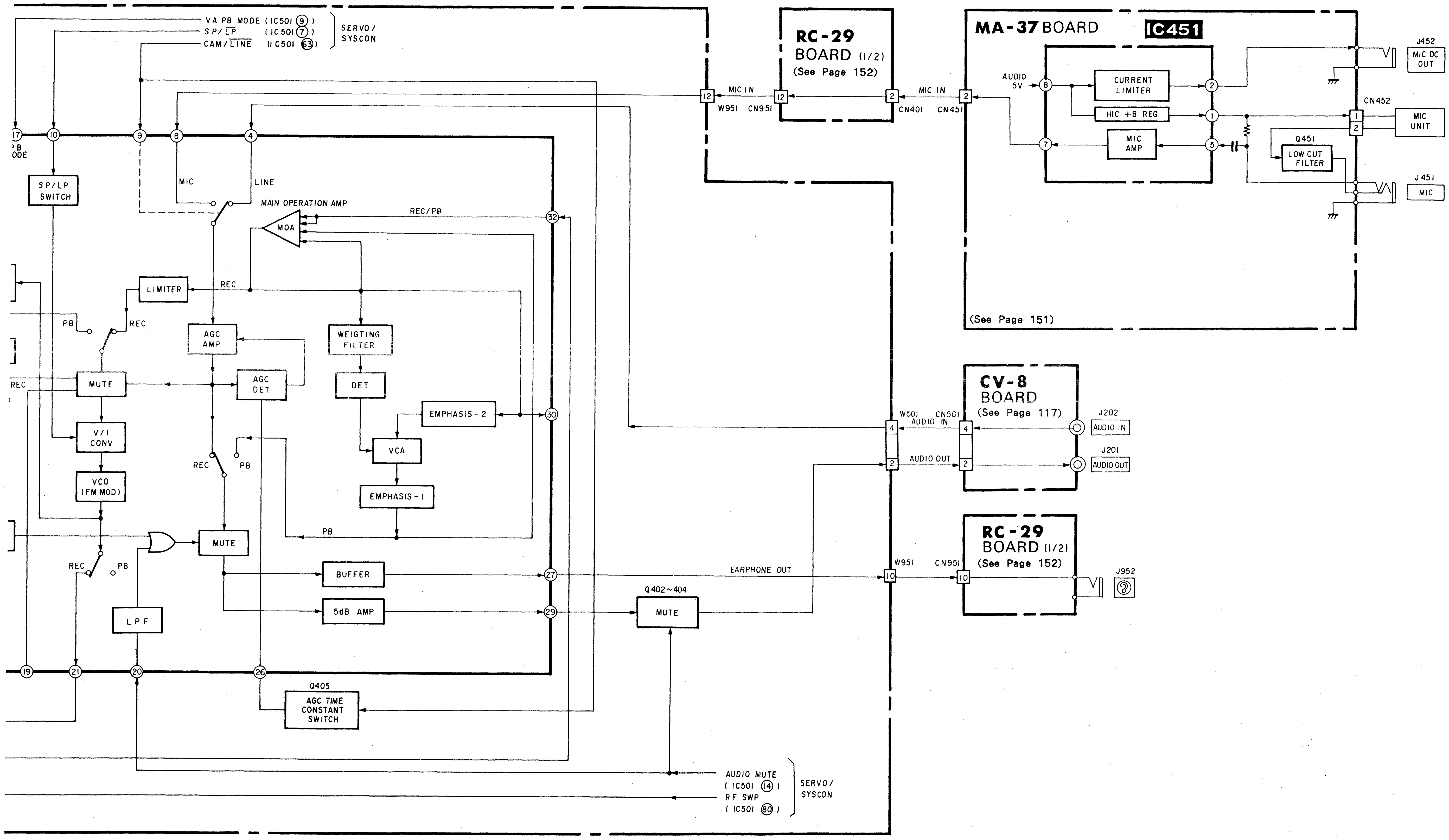
3-9-11. AF Microcomputer (IC802 on CV-8 Board) — Peripheral Circuit Interface

PIN No.	Signal Name	I/O	Function and I/O Level
1	$\overline{\text{SS}}$ OUT	O	EVR data read timing output (PD5 SS input). V period "L" pulse train.
2	IRIS IN/$\overline{\text{OUT}}$	O	Indoors/outdoors determination according to aperture value. "H" for indoors and "L" for outdoors.
3			
4			
5			
6	$\overline{\text{LOW CONTRAST}}$	O	Signal to DDS microcomputer (IC651 on CK-19 board)."L" when subject has low contrast.
7	–	–	
8			Not used.
9	–	–	
10	–	–	
11	$\overline{\text{ZOOM T}}$	O	Normally "H". "L" when zoom motor is rotated in telephoto direction by remote control.
12	$\overline{\text{ZOOM W}}$	O	Normally "H". "L" when zoom motor is rotated in wide angle direction by remote control.
13	Focus N	O	Normally "L". "H" when focus motor is rotated in close range direction.
14	–	–	
15	Focus ∞	O	Normally "L". "H" when focus motor is rotated in far range direction.
16	F SPD ϕ	O	Bit 0 (LSB) of focus motor speed control signal.
17	–	–	
18	F SPD1	O	Bit 1 of focus motor speed control signal.
19	F SPD2	O	Bit 2 of focus motor speed control signal.
20	–	–	
21	F SPD3	O	Bit 3 (MSB) of focus motor speed control signal.
22	–	–	
23	Vss	–	Connected to GND.
24	Vss	–	Connected to GND.
25	–	–	
26	$\overline{\text{Focus N}}$	I	"L" when focus ring is at close range edge.
27	–	–	
28	–	–	
29	–	–	
30	$\overline{\text{FOCUS }\infty}$	O	"L" when focus ring is at far range edge.
31	AF SSW	O	Timing output for bus selection. V period "H" pulse.
32	–	–	
33	DA STB	O	For AF D/A converter data latch. V period "H" pulse train.
34	PAL/$\overline{\text{NTSC}}$	I	NTSC/PAL selection.
35	–	–	
36	$\overline{\text{J STB}}$	O	For external display jig data latch. V period "L" pulse.
37	XCS	O	Active "L" for communication request to IC801 CXD-1204. V period "L" pulse.
38	TEST	–	Connected to VDD.
39	–	–	
40	MODE		Connected to VDD.
41	MISO	I/O	SPI Master: in, Slave: out. V period "H" pulse train.
42	MOSI	I/O	SPI Master: out, Slave: in. V period "L" pulse train.
43	$\overline{\text{SCK}}$	I/O	SPI serial clock. V period "L" pulse train.
44	–	–	
45	$\overline{\text{SS}}$	I	V period "L" pulse train.
46	–	–	

PIN No.	Signal Name	I/O	Function and I/O Level
48	$\overline{\text{EVR CS}}$	I	"L" for EVR data communication request from DDS microcomputer. V period "L" pulse.
49	–	–	
50	–	–	
51	$\overline{\text{Focus FG}}$	I	Interrupt generation at falling edge of focus motor FG. "H" when auto focus OFF. When auto focus ON, "L" pulse with period according to rotational speed of focus motor.
52	CLK OUT	O	Waveform shaped output of Pin (54) clock. (1.79 MHz)
53	–	–	
54	CLK IN	I	External clock input. 14.3 MHz clock input to Pin ㉘ of IC801 is divided to 1/8 and input.
55	VDD		CAM 4.75V
56	–	–	
57	–	–	
58	–	–	
59	–	–	
60	$\overline{\text{SYS RST}}$	I	Normally "H". "L" when reset.
61	AREA	I	Interrupt generation at falling edge from CXD-1204 (IC801). V period pulse.
62	Vpp		CAM 4.75V
63	WND W/$\overline{\text{N}}$	I	Auto focus range area selection. Connected to VDD by 100 kΩ (fixed at wide range side).
64	–	–	

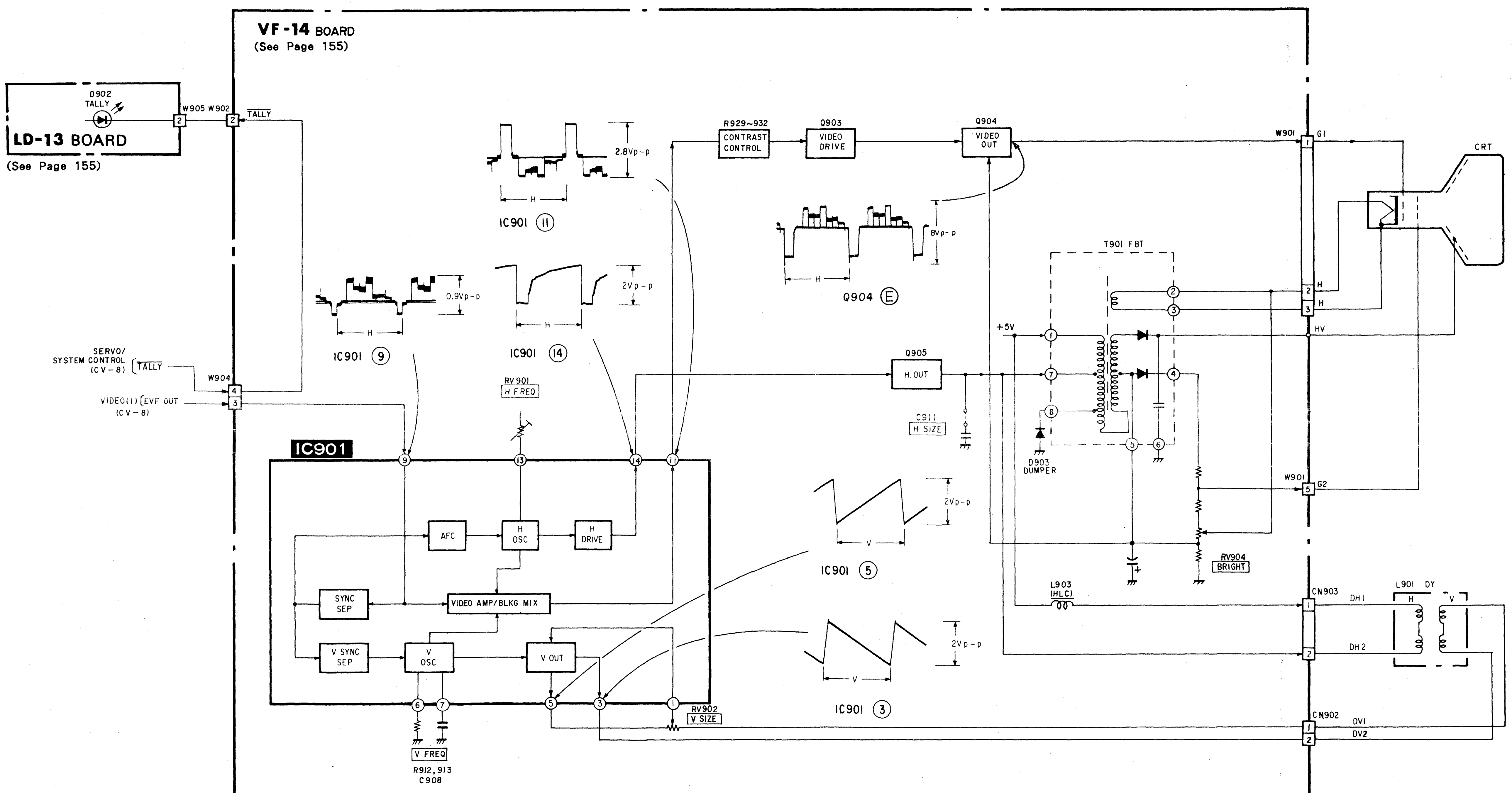
3-10. AUDIO BLOCK DIAGRAM


CO-2 BOARD (AUDIO)
(See Page 136)
IC401
FM MOD/DEMOD
NOISE REDUCTION
17
10
PB MODE
SP/LP SWITCH
FL401
1.5MHz BPF
Q406
RF AMP
11
PB AMP
LIMITER
DROP OUT DETECTOR
φ COMP (FM DEMOD)
PB
HOLD 1
DO
PB
REC
MUTE
15
16
V/I CONV
LPF
VCO (FM MOD)
HOLD 2
MUTE DET
REC
PB
18
PG DOUBLER
31
19
21
20
VIDEO (2)
PB AFM RF
REC AFM RF
Q401
BUFFER

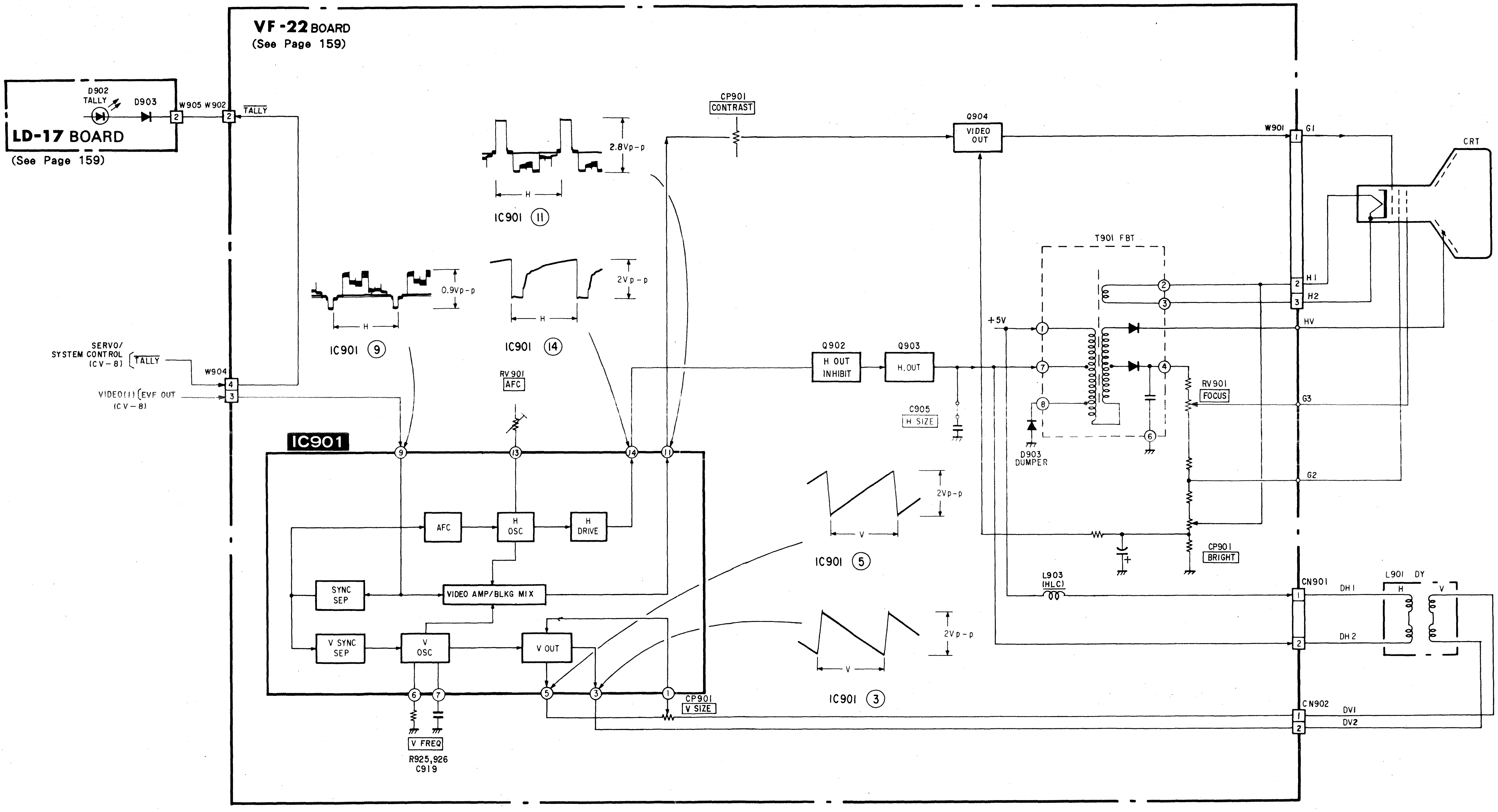

VA PB MODE (IC501 ⑨)
SP/$\overline{LP}$ (IC501 ⑦)
CAM/$\overline{LINE}$ (IC501 (63))
SERVO/
SYSCON
PB
ODE
SP/LP
SWITCH
MIC
LINE
MAIN OPERATION AMP
MOA
REC/PB
LIMITER
REC
PB
REC
AGC
AMP
WEIGTING
FILTER
MUTE
AGC
DET
DET
EMPHASIS - 2
V/I
CONV
VCA
VCO
(FM MOD)
REC
PB
EMPHASIS - 1
PB
MUTE
REC
PB
BUFFER
5dB AMP
LPF
Q402~404
MUTE
EARPHONE OUT
Q405
AGC TIME
CONSTANT
SWITCH
AUDIO MUTE
(IC501 ⑭)
RF SWP
(IC501 (80))
SERVO/
SYSCON
MIC IN
W951
CN951
RC-29
BOARD (1/2)
(See Page 152)
MIC IN
CN401
CN451
MA-37 BOARD
IC451
AUDIO
5V
CURRENT
LIMITER
HIC +B REG
MIC
AMP
Q451
LOW CUT
FILTER
CN452
J452
MIC DC
OUT
MIC
UNIT
J451
MIC
(See Page 151)
CV-8
BOARD
(See Page 117)
W501
CN501
AUDIO IN
AUDIO OUT
J202
AUDIO IN
J201
AUDIO OUT
RC-29
BOARD (1/2)
(See Page 152)
W951
CN951
J952

3-11. VIEW FINDER BLOCK DIAGRAM (TYPE A)

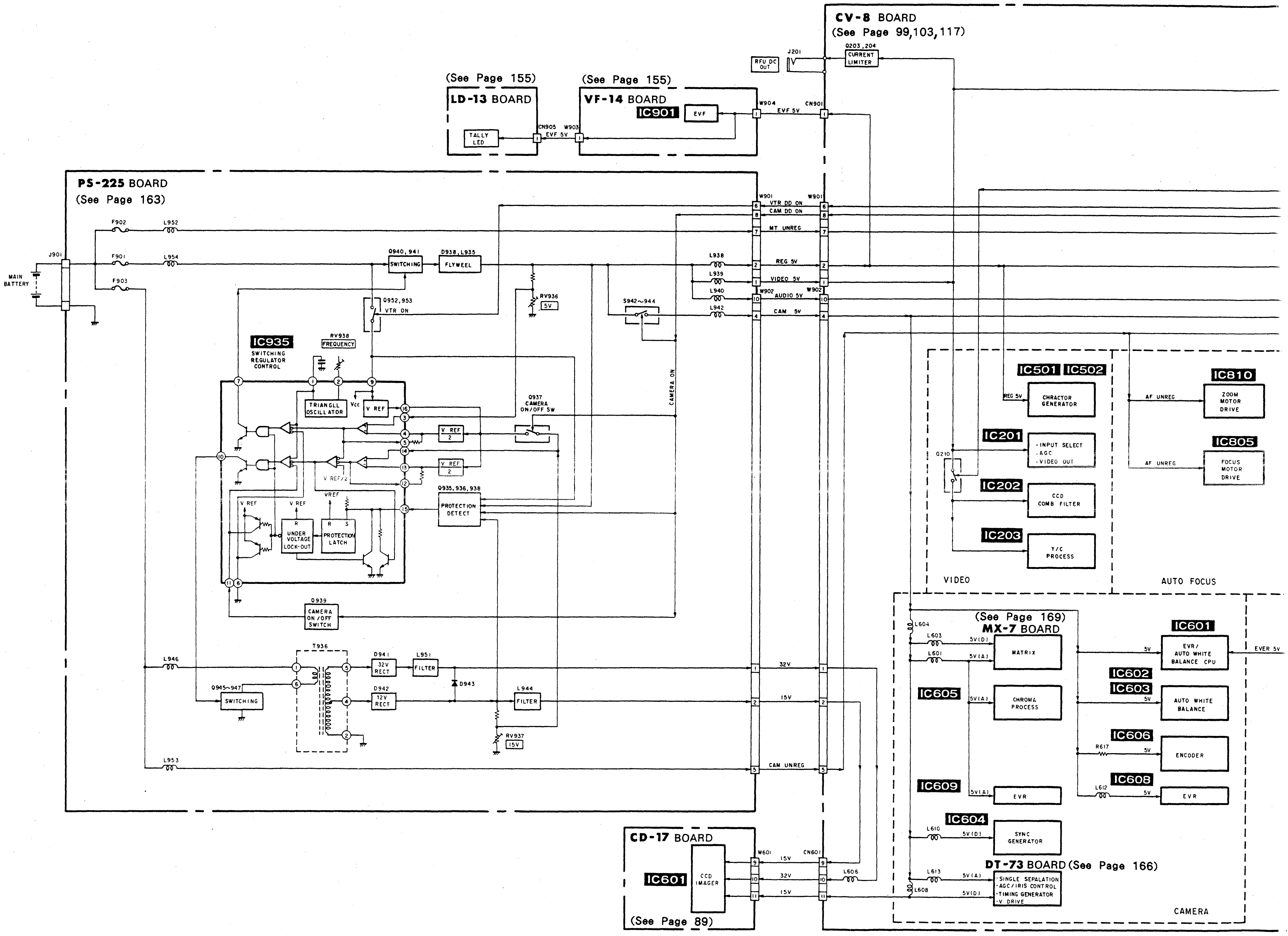
3-12. V

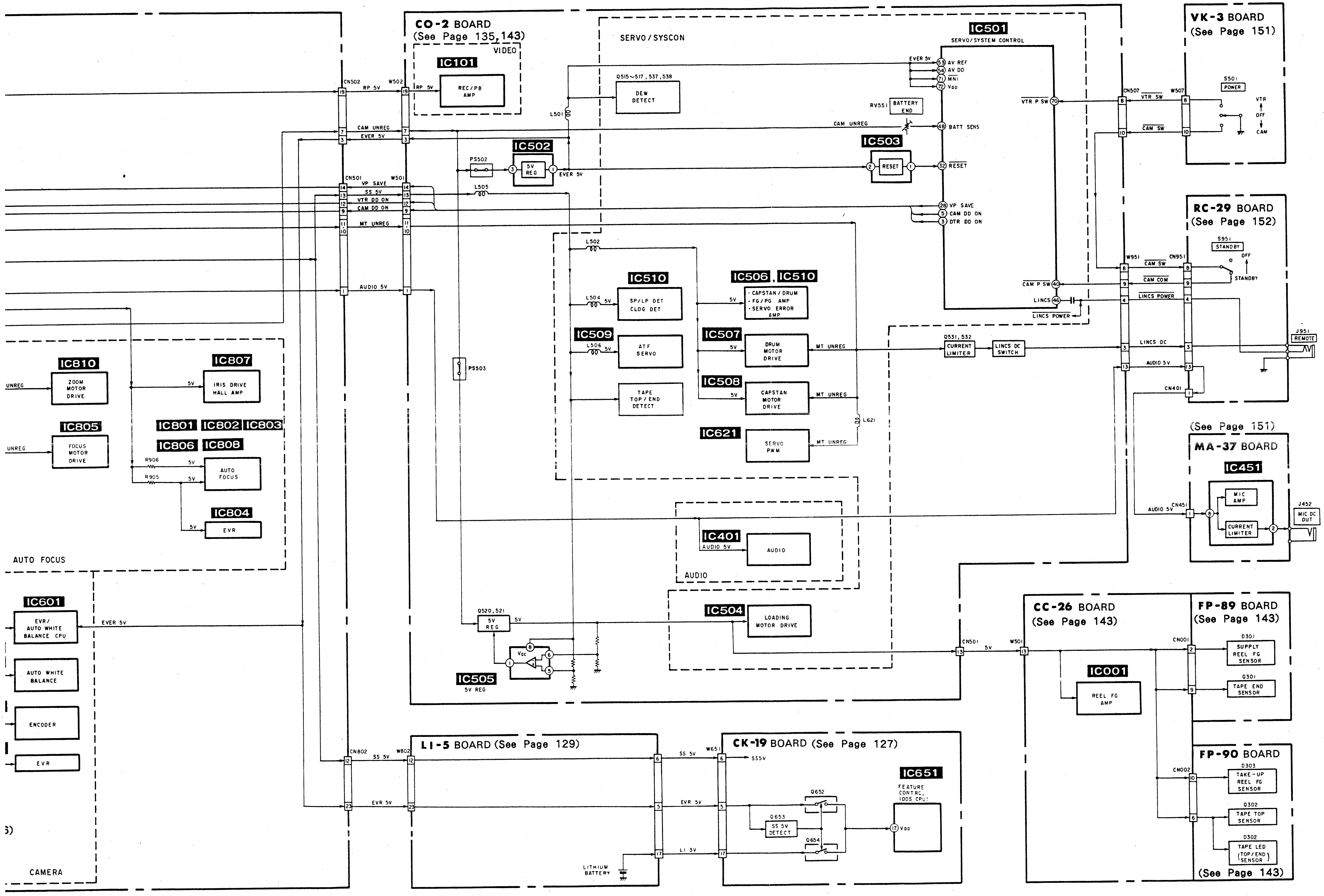

VF-14 BOARD
(See Page 155)
D902
TALLY
LD-13 BOARD
(See Page 155)
W905
W902
TALLY
SERVO/
SYSTEM CONTROL
(CV-8)
TALLY
W904
VIDEO(1)
EVF OUT
(CV-8)
IC901 ⑨
0.9Vp-p
H
IC901 ⑪
2.8Vp-p
IC901 ⑭
2Vp-p
RV901
H FREQ
IC901
AFC
H OSC
H DRIVE
SYNC SEP
VIDEO AMP/BLKG MIX
V SYNC SEP
V OSC
V OUT
V FREQ
R912, 913
C908
RV902
V SIZE
R929~932
CONTRAST CONTROL
Q903
VIDEO DRIVE
Q904
VIDEO OUT
Q904 Ⓔ
8Vp-p
Q905
H.OUT
C911
H SIZE
+5V
T901 FBT
D903
DUMPER
RV904
BRIGHT
L903
(HLC)
IC901 ⑤
2Vp-p
V
IC901 ③
W901
G1
H
HV
G2
CRT
CN903
DH1
DH2
L901 DY
CN902
DV1
DV2

3-12. VIEW FINDER BLOCK DIAGRAM (TYPE B)


VF-22 BOARD
(See Page 159)
D902
TALLY
D903
LD-17 BOARD
(See Page 159)
W905
W902
TALLY
SERVO/
SYSTEM CONTROL
(CV-8)
TALLY
W904
VIDEO(1)
EVF OUT
(CV-8)
2.8Vp-p
H
IC901 ⑪
0.9Vp-p
H
IC901 ⑨
2Vp-p
H
IC901 ⑭
RV901
AFC
IC901
AFC
H OSC
H DRIVE
SYNC SEP
VIDEO AMP/BLKG MIX
V SYNC SEP
V OSC
V OUT
V FREQ
R925,926
C919
CP901
V SIZE
CP901
CONTRAST
Q904
VIDEO OUT
2Vp-p
V
IC901 ⑤
2Vp-p
V
IC901 ③
Q902
H OUT INHIBIT
Q903
H.OUT
C905
H SIZE
+5V
T901 FBT
D903
DUMPER
RV901
FOCUS
CP901
BRIGHT
L903
(HLC)
W901
G1
H1
H2
HV
G3
G2
CRT
CN901
DH1
DH2
L901 DY
H
V
CN902
DV1
DV2

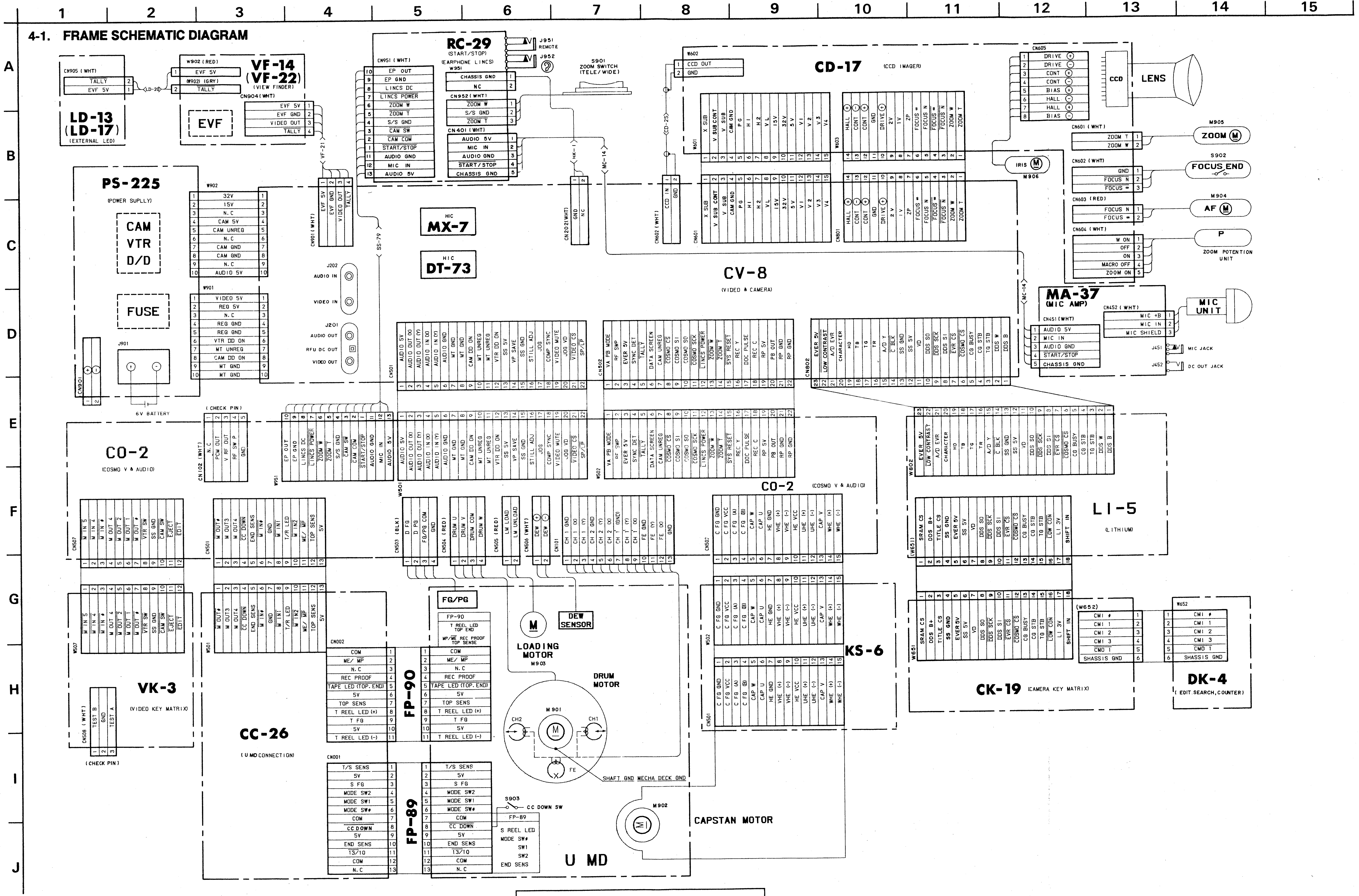
3-13. POWER BLOCK DIAGRAM


CV-8 BOARD
(See Page 99,103,117)
Q203,204
CURRENT LIMITER
J201
RFU DC OUT
(See Page 155)
LD-13 BOARD
TALLY LED
CN905
W903
EVF 5V
(See Page 155)
VF-14 BOARD
IC901
EVF
W904
CN901
EVF 5V
PS-225 BOARD
(See Page 163)
J901
MAIN BATTERY
F902
L952
F901
L954
F903
Q940,941
SWITCHING
D938,L935
FLYWEEL
Q952,953
VTR ON
RV936
5V
S942~944
W901
VTR DD ON
CAM DD ON
MT UNREG
L938
REG 5V
L939
VIDEO 5V
L940
W902
AUDIO 5V
L942
CAM 5V
CAMERA ON
IC935
SWITCHING REGULATOR CONTROL
RV938
FREQUENCY
TRIANGLE OSCILLATOR
Vcc
V REF
V REF/2
VREF
UNDER VOLTAGE LOCK-OUT
PROTECTION LATCH
R
S
Q937
CAMERA ON/OFF SW
Q935,936,938
PROTECTION DETECT
Q939
CAMERA ON/OFF SWITCH
T936
L946
Q945~947
SWITCHING
D941
32V RECT
L951
FILTER
D943
D942
12V RECT
L944
FILTER
RV937
15V
32V
15V
L953
CAM UNREG
CD-17 BOARD
IC601
CCD IMAGER
W601
CN601
L606
(See Page 89)
IC501 IC502
REG 5V
CHRACTOR GENERATOR
IC201
·INPUT SELECT
·AGC
·VIDEO OUT
Q210
IC202
CCD COMB FILTER
IC203
Y/C PROCESS
VIDEO
IC810
AF UNREG
ZOOM MOTOR DRIVE
IC805
AF UNREG
FOCUS MOTOR DRIVE
AUTO FOCUS
(See Page 169)
MX-7 BOARD
L604
L603
5V(D)
L601
5V(A)
MATRIX
IC605
5V(A)
CHROMA PROCESS
IC609
5V(A)
EVR
IC604
L610
5V(D)
SYNC GENERATOR
DT-73 BOARD (See Page 166)
L613
5V(A)
L608
5V(D)
·SINGLE SEPALATION
·AGC/IRIS CONTROL
·TIMING GENERATOR
·V DRIVE
IC601
5V
EVR/AUTO WHITE BALANCE CPU
EVER 5V
IC602
IC603
5V
AUTO WHITE BALANCE
IC606
R617
5V
ENCODER
IC608
L612
5V
EVR
CAMERA


CO-2 BOARD
(See Page 135,143)
VIDEO
IC101
REC/PB AMP
SERVO/SYSCON
IC501
SERVO/SYSTEM CONTROL
EVER 5V
AV REF
AV DD
MNI
VDD
BATTERY END
RV551
BATT SENS
VTR P SW
CAM UNREG
IC502
5V REG
PS502
EVER 5V
IC503
RESET
Q515~517, 537, 538
DEW DETECT
L501
L505
VP SAVE
CAM DD ON
DTR DD ON
CN502
W502
RP 5V
CAM UNREG
EVER 5V
CN501
W501
VP SAVE
SS 5V
VTR DD ON
CAM DD ON
MT UNREG
AUDIO 5V
L502
IC510
SP/LP DET
CLOG DET
L504
IC506
IC510
CAPSTAN/DRUM
FG/PG AMP
SERVO ERROR AMP
IC509
ATF SERVO
L506
IC507
DRUM MOTOR DRIVE
MT UNREG
IC508
CAPSTAN MOTOR DRIVE
TAPE TOP/END DETECT
IC621
SERVO PWM
L621
PS503
Q531, 532
CURRENT LIMITER
LINCS DC SWITCH
CAM P SW
LINCS
LINCS POWER
IC401
AUDIO 5V
AUDIO
IC504
LOADING MOTOR DRIVE
Q520, 521
5V REG
IC505
5V REG
Vcc
IC810
ZOOM MOTOR DRIVE
UNREG
IC807
IRIS DRIVE HALL AMP
IC805
FOCUS MOTOR DRIVE
IC801
IC802
IC803
IC806
IC808
AUTO FOCUS
R906
R905
IC804
EVR
AUTO FOCUS
IC601
EVR/AUTO WHITE BALANCE CPU
EVER 5V
AUTO WHITE BALANCE
ENCODER
EVR
CAMERA
LI-5 BOARD (See Page 129)
CN802
W802
SS 5V
EVR 5V
LITHIUM BATTERY
CK-19 BOARD (See Page 127)
W651
SS5V
EVR 5V
LI 3V
Q652
Q653
SS 5V DETECT
Q654
IC651
FEATURE CONTROL (DDS CPU)
VDD
VK-3 BOARD
(See Page 151)
S501
POWER
VTR
OFF
CAM
CN507
W507
VTR SW
CAM SW
RC-29 BOARD
(See Page 152)
S951
STANDBY
OFF
STANDBY
W951
CN951
CAM SW
CAM COM
LINCS POWER
LINCS DC
AUDIO 5V
CN401
J951
REMOTE
(See Page 151)
MA-37 BOARD
IC451
MIC AMP
CURRENT LIMITER
AUDIO 5V
CN451
J452
MIC DC OUT
CC-26 BOARD
(See Page 143)
CN501
W501
5V
IC001
REEL FG AMP
CN001
FP-89 BOARD
(See Page 143)
D301
SUPPLY REEL FG SENSOR
Q301
TAPE END SENSOR
FP-90 BOARD
CN002
D303
TAKE-UP REEL FG SENSOR
Q302
TAPE TOP SENSOR
D302
TAPE LED (TOP/END SENSOR)
(See Page 143)

SECTION 4
PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

4-1. FRAME SCHEMATIC DIAGRAM


1
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9
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11
12
13
14
15
A
B
C
D
E
F
G
H
I
J
LD-13
(LD-17)
(EXTERNAL LED)
VF-14
(VF-22)
(VIEW FINDER)
EVF
RC-29
(START/STOP)
(EARPHONE LINCS)
J951 REMOTE
J952
S901 ZOOM SWITCH (TELE/WIDE)
CD-17
(CCD IMAGER)
CCD
LENS
M905 ZOOM
FOCUS END
M904 AF
P
ZOOM POTENTION UNIT
IRIS
M906
PS-225
(POWER SUPPLY)
CAM
VTR
D/D
FUSE
6V BATTERY
MX-7
DT-73
J202 AUDIO IN
VIDEO IN
J201 AUDIO OUT
RFU DC OUT
VIDEO OUT
CV-8
(VIDEO & CAMERA)
MA-37
(MIC AMP)
MIC UNIT
J451 MIC JACK
J452 DC OUT JACK
CO-2
(COSMO V & AUDIO)
LI-5
(LITHIUM)
VK-3
(VIDEO KEY MATRIX)
CC-26
(U MD CONNECTION)
FP-90
FP-89
FG/PG
LOADING MOTOR
M903
DEW SENSOR
DRUM MOTOR
M901
CH1
CH2
FE
SHAFT GND MECHA DECK GND
S903 CC DOWN SW
M902
CAPSTAN MOTOR
U MD
KS-6
CK-19
(CAMERA KEY MATRIX)
DK-4
(EDIT SEARCH, COUNTER)
(CHECK PIN)

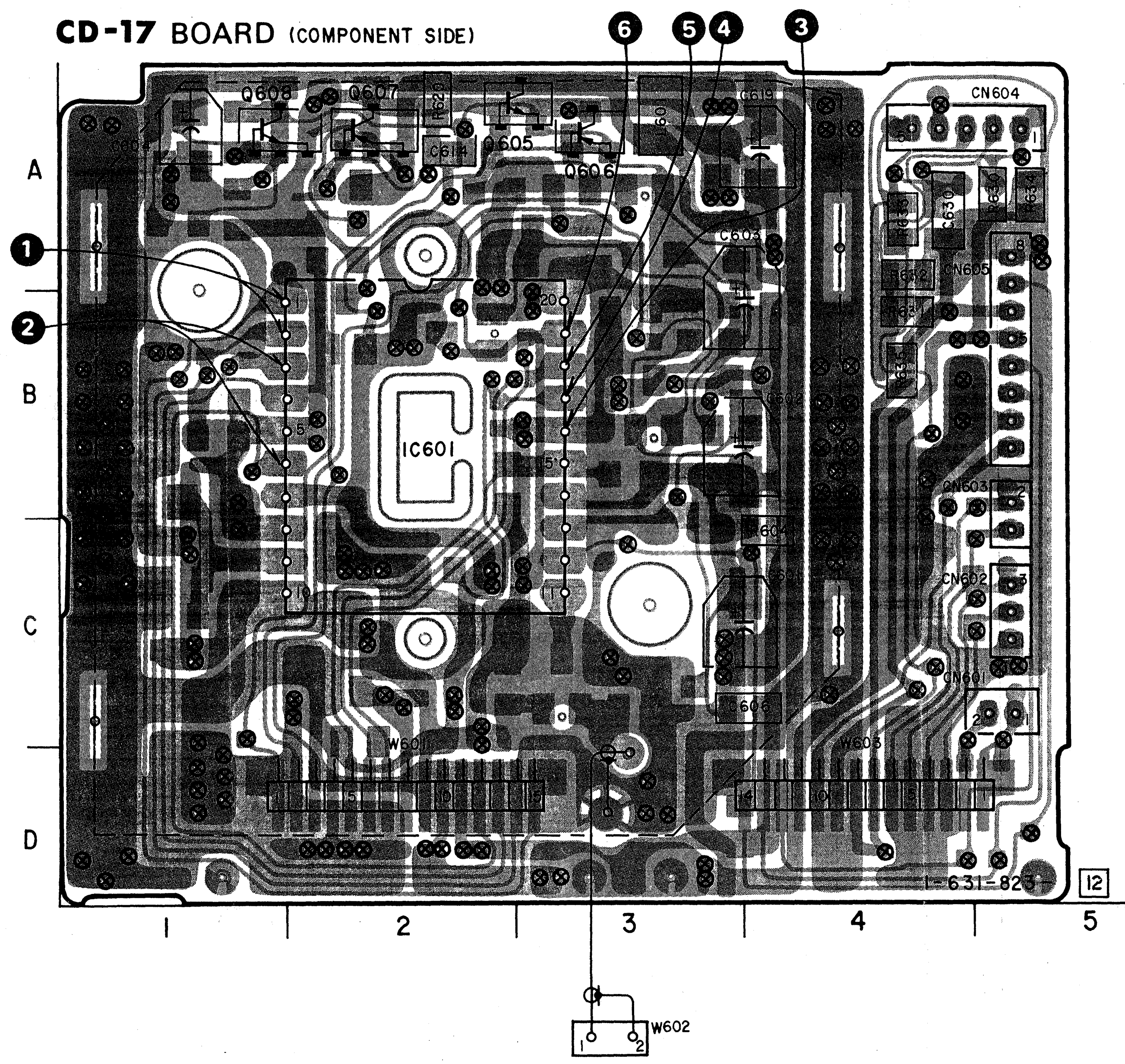
CD-17 BOA	
D601	C-8
D602	B-8
D603	A-8
D604	A-9
IC601	B-2
Q601	C-8
Q602	A-7
Q603	A-7
Q604	B-8
Q605	A-2
Q606	A-3
Q607	A-2
Q608	A-1
Q609	B-7
Q610	B-7

4-2. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

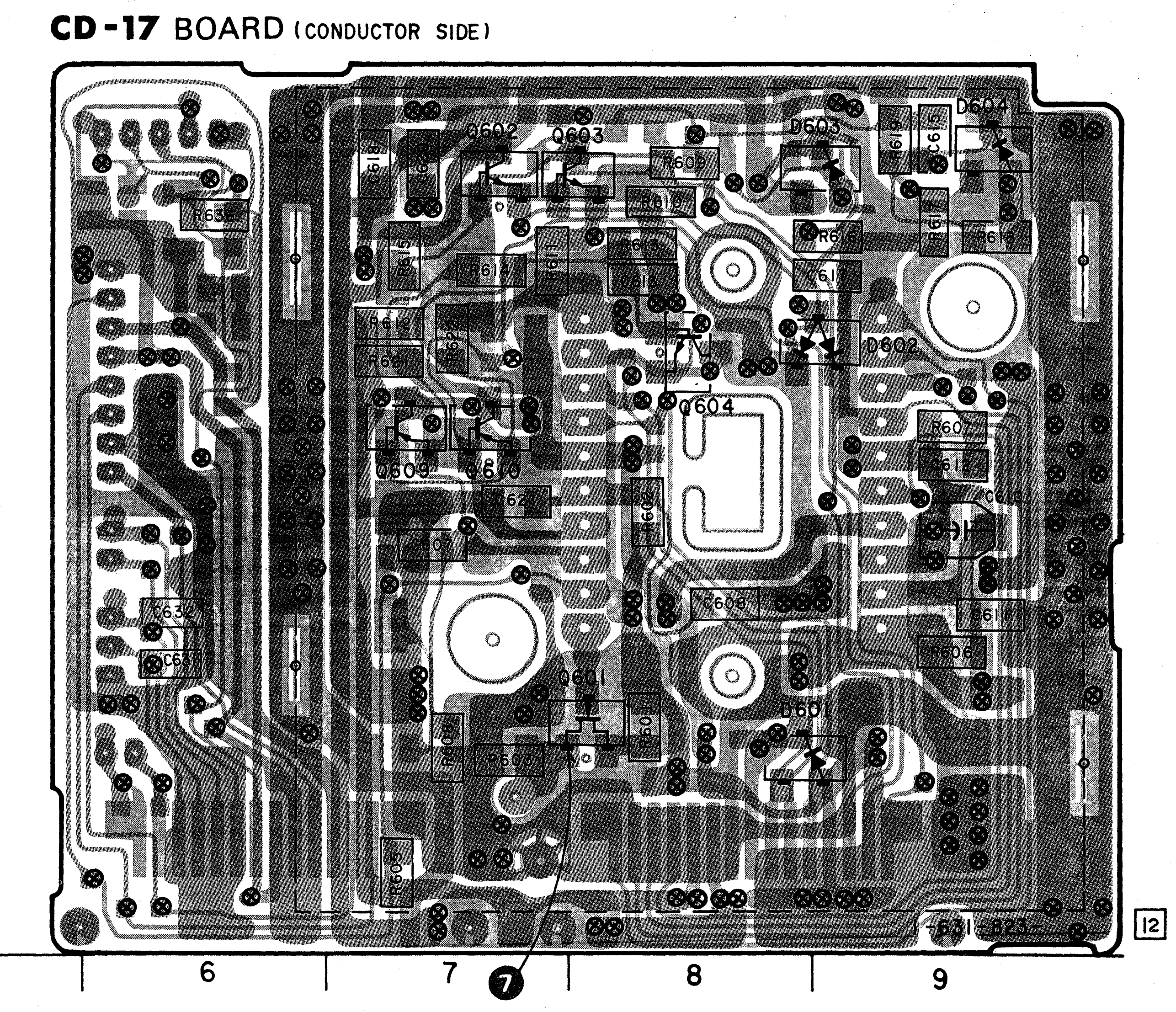
CD-17 (CCD IMAGER/ZOOM, FOCUS) PRINTED WIRING BOARDS

— Ref. No. CD-17 BOARD: 1000 series —

CD-17 BOARD	
D601	C-8
D602	B-8
D603	A-8
D604	A-9
IC601	B-2
Q601	C-8
Q602	A-7
Q603	A-7
Q604	B-8
Q605	A-2
Q606	A-3
Q607	A-2
Q608	A-1
Q609	B-7
Q610	B-7



CD-17 BOARD (COMPONENT SIDE)
❶
❷
❸
❹
❺
❻
A
B
C
D
1
2
3
4
5
Q608
Q607
Q605
Q606
C619
C614
C603
IC601
CN604
CN605
CN603
CN602
CN601
W601
W602
W603
1-631-823
12

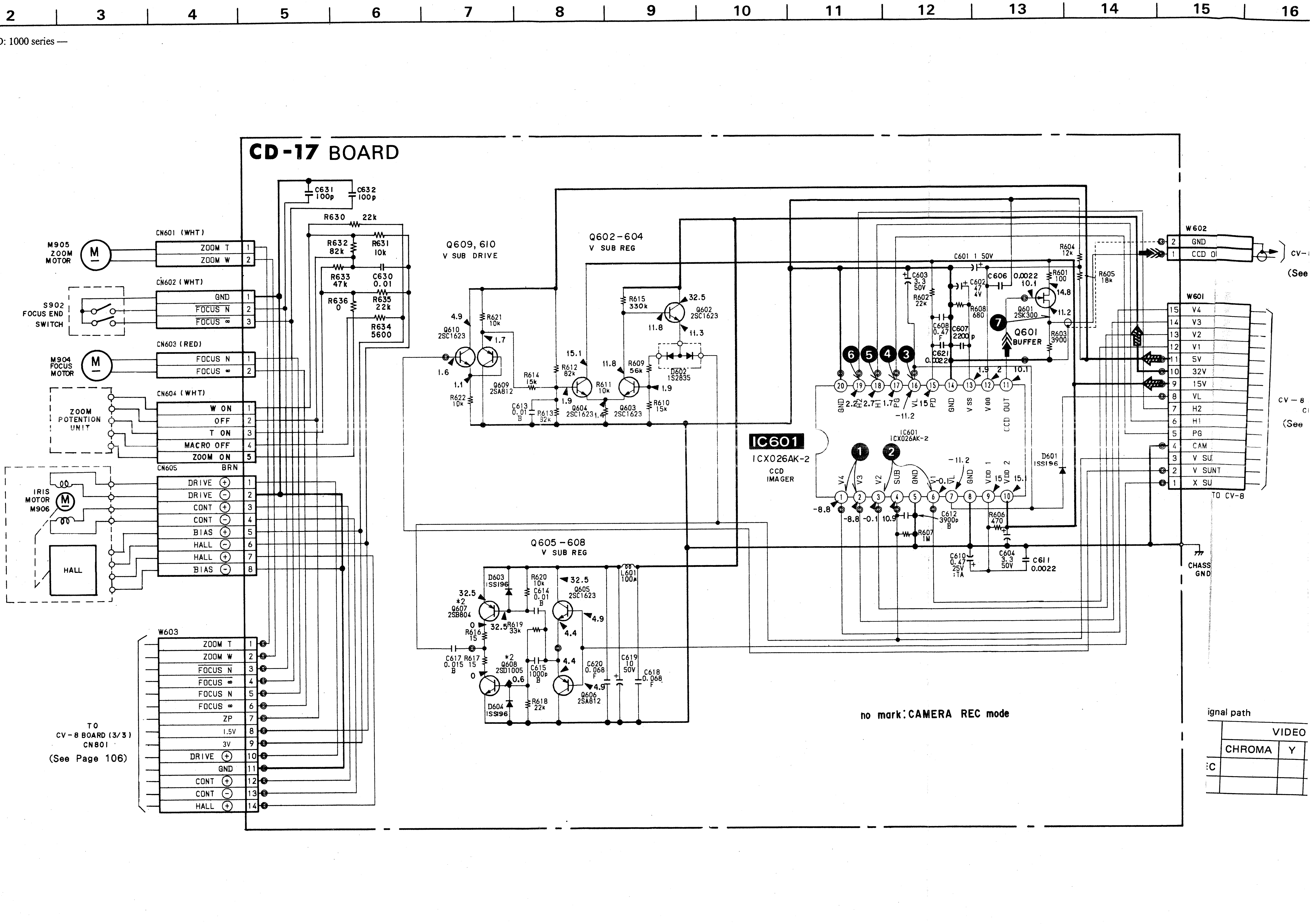


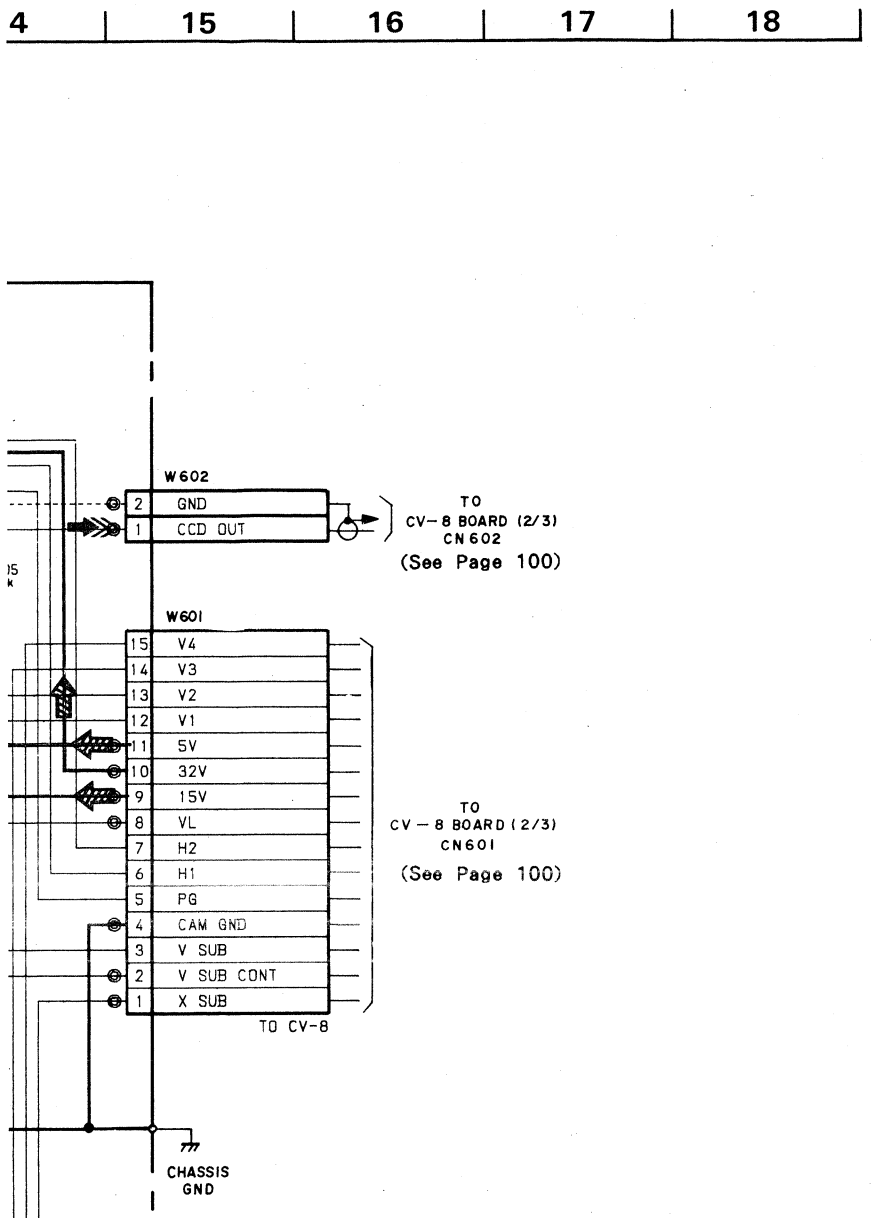
CD-17 BOARD (CONDUCTOR SIDE)
❼
6
7
8
9
Q602
Q603
Q604
Q609
Q610
Q601
D603
D604
D602
D601
R633
R609
R618
R616
R615
R614
R613
R612
R620
R621
R607
R606
R608
R605
R602
C615
C617
C610
C611
C608
C632
C631
-631-823
12

CAUTIONS FOR REPLACEMENT OF CCD IMAGER

- When you replaced the CCD imager adjust the whole camera assembly.
- CCD imager has such a structure that it may be destructed by static electricity, so handle it with a care similar for MOS IC.
  Further, be cartain that the light receiving part has no stick of dust and no entry of bright light.

— Ref. No. CD-17 BOARD: 1000 series —

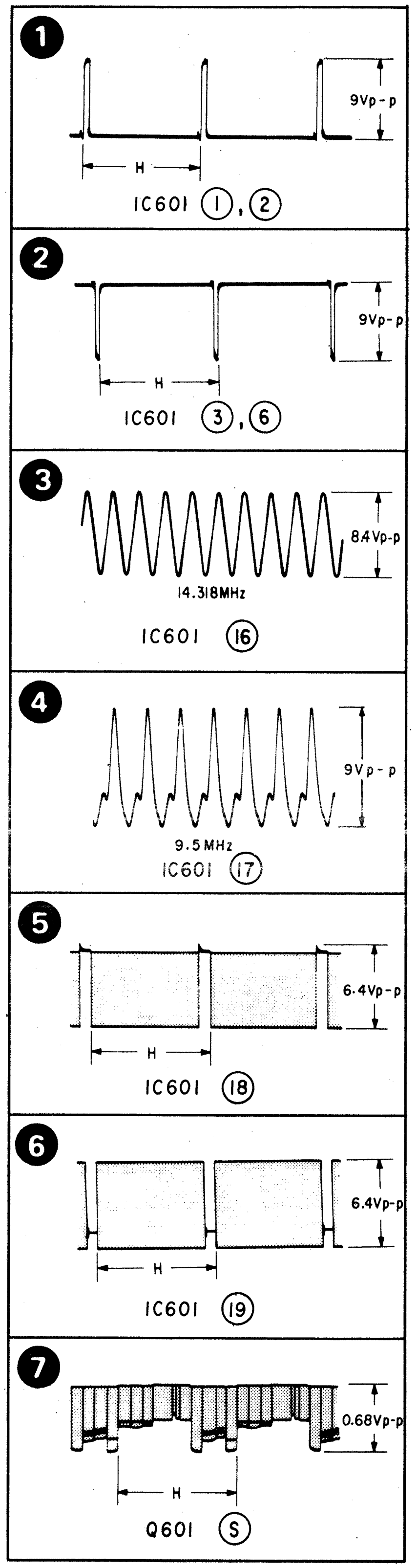

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
A B C D E F G H I J
CD-17 BOARD
M905 ZOOM MOTOR
S902 FOCUS END SWITCH
M904 FOCUS MOTOR
ZOOM POTENTION UNIT
IRIS MOTOR M906
HALL
CN601 (WHT)
ZOOM T
ZOOM W
CN602 (WHT)
GND
FOCUS N
FOCUS ∞
CN603 (RED)
FOCUS N
FOCUS ∞
CN604 (WHT)
W ON
OFF
T ON
MACRO OFF
ZOOM ON
CN605 BRN
DRIVE ⊕
DRIVE ⊖
CONT ⊕
CONT ⊖
BIAS ⊕
HALL ⊖
HALL ⊕
BIAS ⊖
W603
ZOOM T
ZOOM W
FOCUS N
FOCUS ∞
FOCUS N
FOCUS ∞
ZP
1.5V
3V
DRIVE ⊕
GND
CONT ⊕
CONT ⊖
HALL ⊕
TO CV-8 BOARD (3/3) CN801
(See Page 106)
C631 100p
C632 100p
R630 22k
R632 82k
R631 10k
R633 47k
C630 0.01
R636 0
R635 22k
R634 5600
Q609, 610 V SUB DRIVE
Q610 2SC1623
Q609 2SA812
R621 10k
R622 10k
R614 15k
C613 0.01 B
R613 82k
R612 82k
R611 10k
Q604 2SC1623
Q603 2SC1623
Q602-604 V SUB REG
R615 330k
Q602 2SC1623
R609 56k
R610 15k
D602 1S2835
Q605-608 V SUB REG
D603 1SS196
R620 10k
C614 0.01 B
Q605 2SC1623
Q607 2SB804
R616 15
R619 33k
C617 0.015 B
R617 15
Q608 2SD1005
C615 1000p
C620 0.068 F
C619 10 50V
C618 0.068 F
L601 100μ
D604 1SS196
R618 22k
Q606 2SA812
IC601
ICX026AK-2
CCD IMAGER
IC601 ICX026AK-2
C601 1 50V
C603 3.3 50V
R602 22k
C602 47 4V
C606 0.0022
R601 100
R608 680
C608 0.47 F
C607 2200p
C621 0.0022
Q601 2SK300
Q601 BUFFER
R603 3900
R604 12k
R605 18k
D601 1SS196
C612 3900p B
R606 470
R607 1M
C610 0.47 25V TA
C604 3.3 50V
C611 0.0022
GND H2 H1 PG VL PD GND VSS VGG CCD OUT
V4 V3 V2 SUB GND V1 GND VDD 1 VDD 2
W602
GND
CCD OUT
CV-
(See
W601
V4
V3
V2
V1
5V
32V
15V
VL
H2
H1
PG
CAM
V SU
V SUNT
X SU
TO CV-8
CV-8
(See
CHASSIS GND
no mark: CAMERA REC mode
Signal path
VIDEO
CHROMA
Y
:C


4
15
16
17
18
W602
2 GND
1 CCD OUT
TO CV-8 BOARD (2/3) CN602
(See Page 100)
W601
15 V4
14 V3
13 V2
12 V1
11 5V
10 32V
9 15V
8 VL
7 H2
6 H1
5 PG
4 CAM GND
3 V SUB
2 V SUB CONT
1 X SUB
TO CV-8
TO CV-8 BOARD (2/3) CN601
(See Page 100)
CHASSIS GND

- Signal path

	VIDEO Signal			AUDIO Signal
	CHROMA	Y	Y/CHROMA	
REC			⇒	
PB				

CD-17 BOARD



THIS NOTE IS COMMON FOR PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS.

(In addition to this , the necessary note is printed in each block.)

- **For printed wiring boards.**
- ○— : indicated a lead wire mounted on the component side.
- ●— : indicated a lead wire mounted on the conductor side.
- ⊗ : Through hole.
- ▨ : Pattern from the side which enables seeing.
- ▨ : Pattern of the rear side.
- Circled numbers refer to waveforms.

Caution:	
Pattern face side: (Conductor Side)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Component side)	Parts on the parts face side seen from the parts face are indicated.

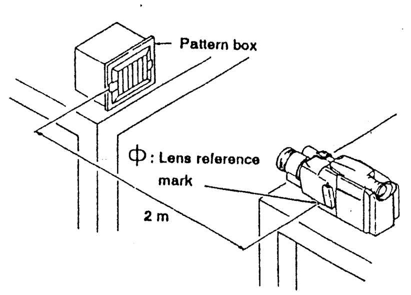
- **For schematic diagrams.**
- Caution when replacing chip parts.
  New parts must be attached after removal of chip.
  Be careful not to heat the minus side of tantalum capacitor, because it is damaged by the heat.
- All resistors are in ohms, 1/4W unless otherwise noted.
  Chip resistor are 1/10W unless otherwise noted.
  kΩ : 1000Ω , MΩ : 1000kΩ .
- All capacitors are in μF unless otherwise noted. pF: μμF.
  50V or less are not indicated except for electrolytics and tantalums.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- -▭- : nonflammable resistor.
- -∿- : fusible resistor.
- ▭ : panel designation.
- ▭ : adjustment for repeair.
- ━ : B+ Line.
- ⇒ : IN/OUT direction of (+, –) B LINE.
- Circled numbers refer to waveforms.

Note:	Note:
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safty. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une piéce portant le numéro spécifié.

When indicating parts by reference number, please include the board name.

- **Measuring conditions voltage value and waveform. (CAMERA, CAMERA FUNCTION block)**
- The object is color bar chart of pattern box.
- Voltages are dc between ground and measurement points. Readings are taken with a digital multimeter (DC 10MΩ).
- Voltage variations may be noted due to normal production tolerances.

1. Connection


Pattern box
Φ: Lens reference mark
2 m

2. Adjust the distance so that the output waveform of Fig. a and the Fig. b can be obtain.

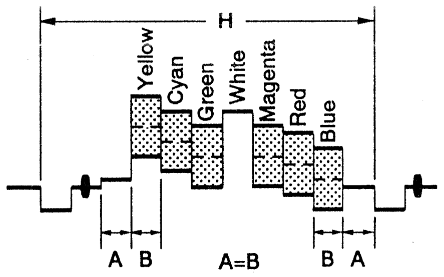

H
Yellow
Cyan
Green
White
Magenta
Red
Blue
A B
A=B
B A

Fig. a (Video output terminal output waveform

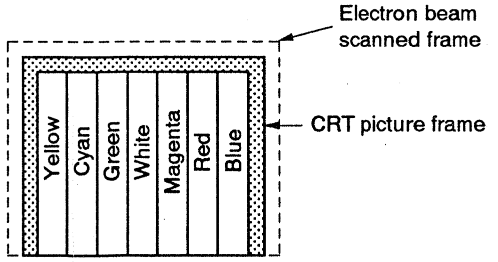
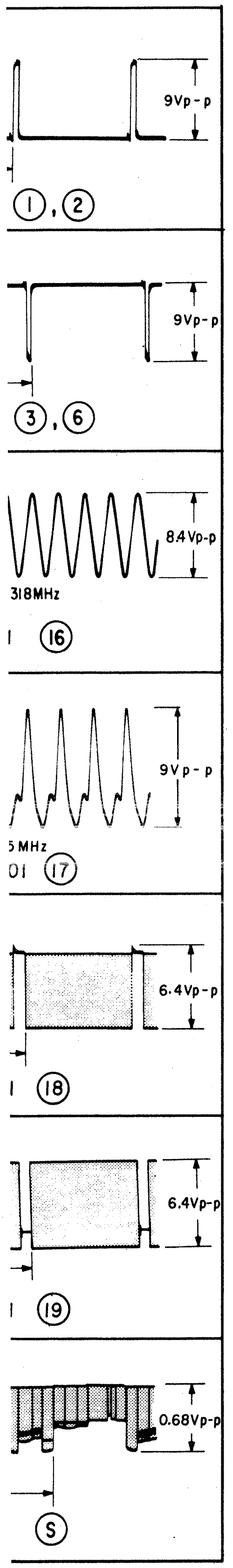

Electron beam scanned frame
CRT picture frame
Yellow
Cyan
Green
White
Magenta
Red
Blue

Fig. (Picture on monitor TV)

(VIDEO, SERVO/SYSTEM CONTROL, VIDEO FUNCTION, VIEW FINDER block)

- Voltages are dc between ground and measurement points.
- Readings are taken with a color-bar signal input.
- Readings are taken with a digital multimeter (DC10MΩ).
- Voltage variations may be noted due to normal production tolerances.



THIS NOTE IS COMMON FOR PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS.

(In addition to this, the necessary note is printed in each block.)

- **For printed wiring boards.**
- ○— : indicated a lead wire mounted on the component side.
- ●— : indicated a lead wire mounted on the conductor side.
- ⊗ : Through hole.
- ▨ : Pattern from the side which enables seeing.
- ▩ : Pattern of the rear side.
- Circled numbers refer to waveforms.

Caution:	
Pattern face side: (Conductor Side)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Component side)	Parts on the parts face side seen from the parts face are indicated.

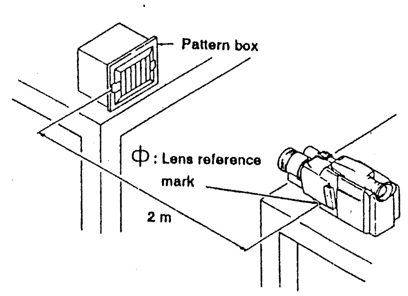
- **For schematic diagrams.**
- Caution when replacing chip parts.
  New parts must be attached after removal of chip.
  Be careful not to heat the minus side of tantalum capacitor, because it is damaged by the heat.
- All resistors are in ohms, 1/4W unless otherwise noted.
  Chip resistor are 1/10W unless otherwise noted.
  kΩ : 1000Ω , MΩ : 1000kΩ .
- All capacitors are in μF unless otherwise noted. pF: μμF.
  50V or less are not indicated except for electrolytics and tantalums.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- : nonflammable resistor.
- : fusible resistor.
- ▭ : panel designation.
- ▭ : adjustment for repeair.
- ━ : B+ Line.
- ⇨ : IN/OUT direction of (+, –) B LINE.
- Circled numbers refer to waveforms.

Note:	Note:
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safty. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une piéce portant le numéro spécifié.

When indicating parts by reference number, please include the board name.

- **Measuring conditions voltage value and waveform. (CAMERA, CAMERA FUNCTION block)**
- The object is color bar chart of pattern box.
- Voltages are dc between ground and measurement points. Readings are taken with a digital multimeter (DC 10MΩ).
- Voltage variations may be noted due to normal production tolerances.

1. Connection



2. Adjust the distance so that the output waveform of Fig. a and the Fig. b can be obtain.

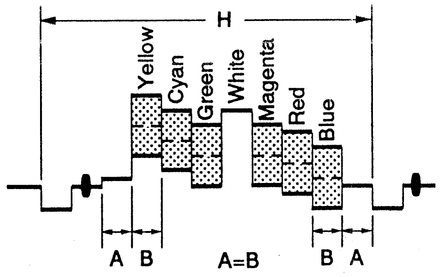


Fig. a (Video output terminal output waveform

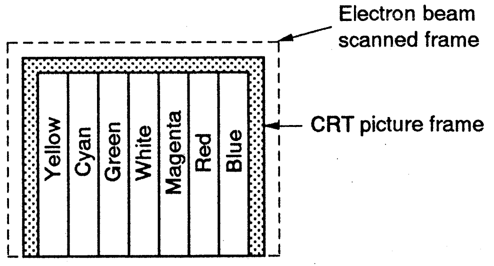


Fig. (Picture on monitor TV)

(VIDEO, SERVO/SYSTEM CONTROL, VIDEO FUNCTION, VIEW FINDER block)

- Voltages are dc between ground and measurement points.
- Readings are taken with a color-bar signal input.
- Readings are taken with a digital multimeter (DC10MΩ).
- Voltage variations may be noted due to normal production tolerances.

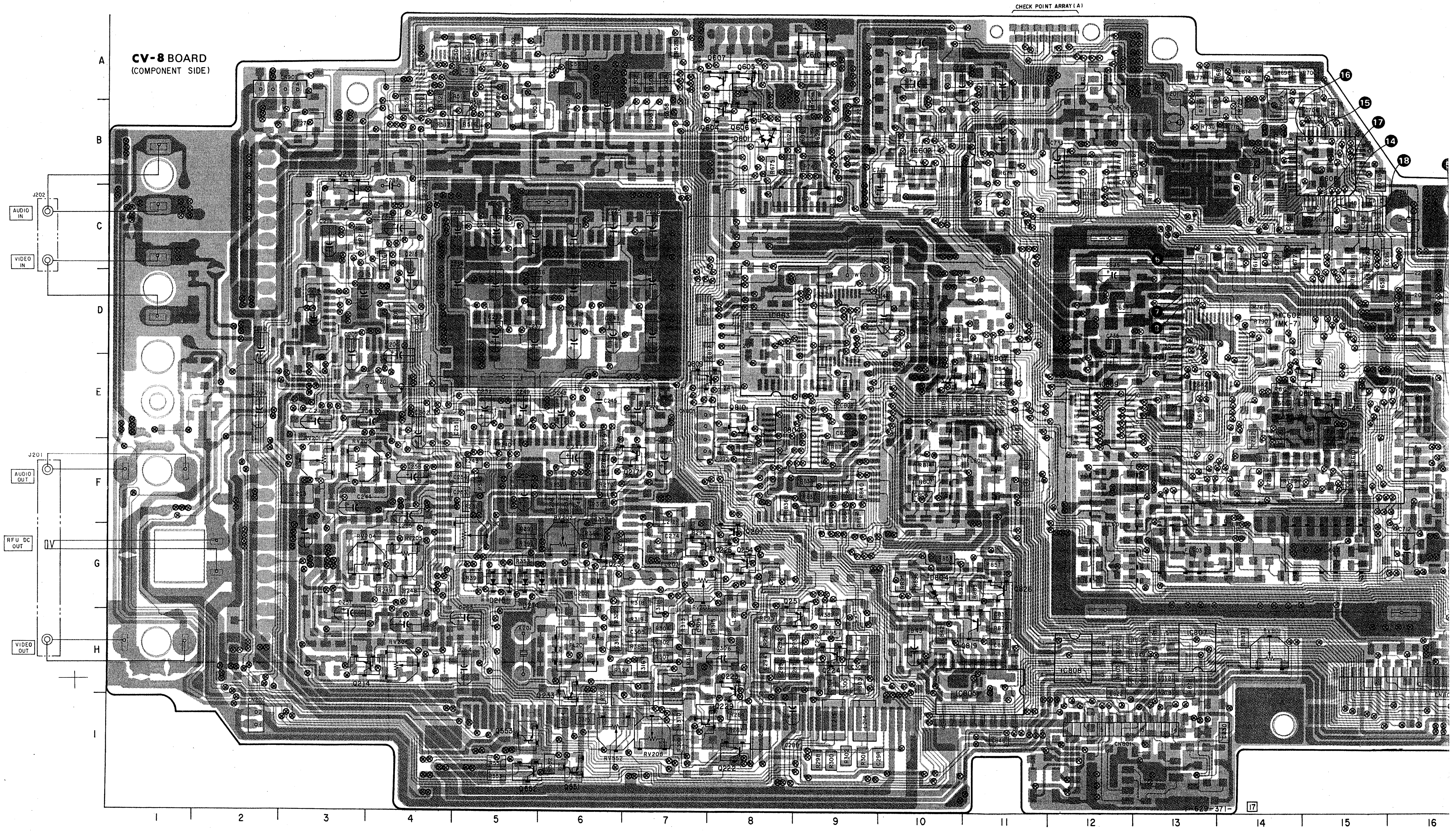
93

CV-8 (CAMERA, VIDEO PROCESS) PRINTED WIRING BOARDS

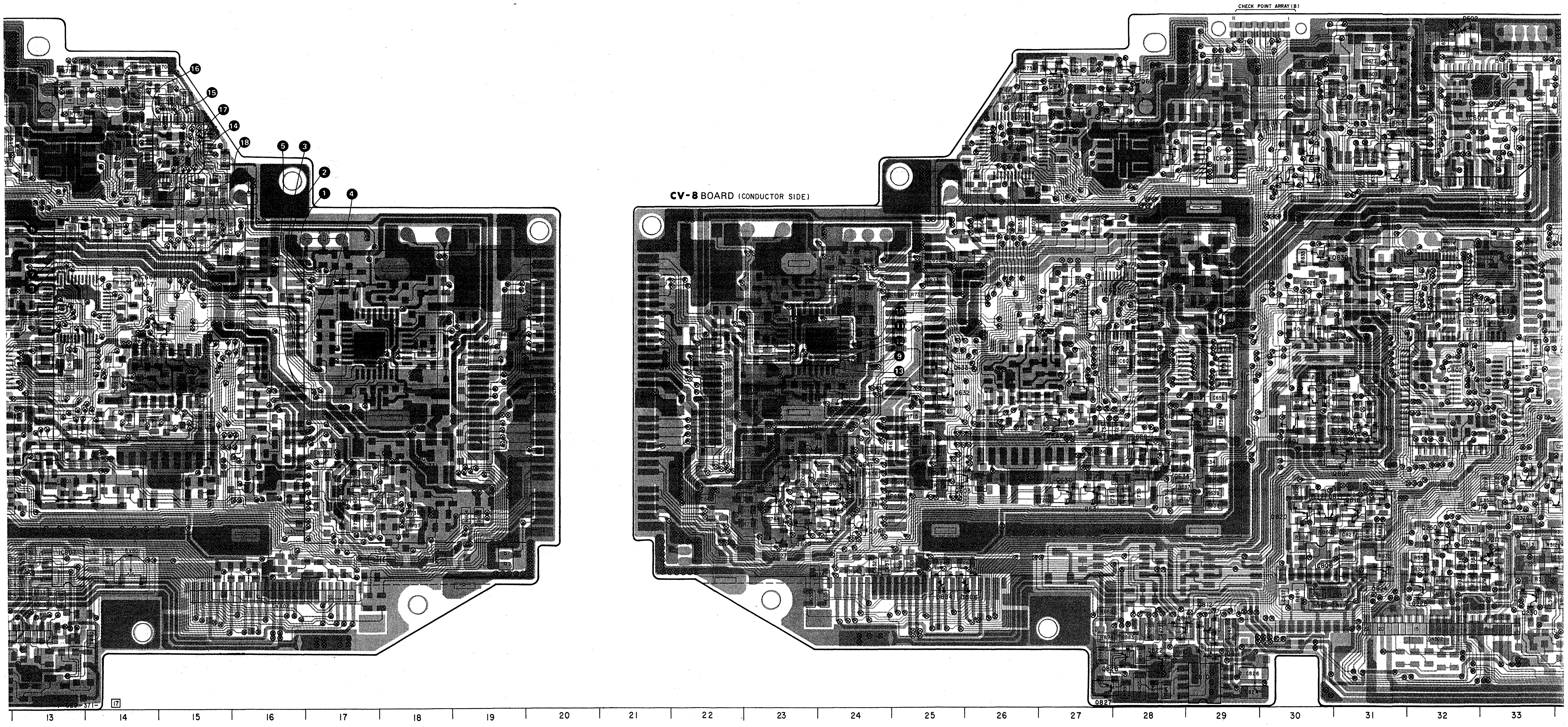
— Ref. No. CV-8 BOARD: 2000 series —

CV-8 BOARD

D210	H-38
D211	H-33
D213	H-34
D214	G-5
D215	G-5
D501	A-36
D601	B-8
D602	A-32
D604	H-25
D606	H-26
D804	G-10
IC201	D-38
IC202	D-35
IC203	F-35
IC501	A-34
IC502	A-36
IC601	B-32
IC602	B-10
IC603	B-30
IC604	E-23
IC605	D-27
IC606	B-15
IC608	B-29
IC609	E-12
IC610	A-9
IC801	D-32
IC802	E-32
IC803	D-8
IC804	E-8
IC805	H-11
IC806	H-30
IC807	H-13
IC808	H-12
IC810	I-29
Q202	B-38
Q203	E-40
Q204	E-39
Q206	G-33
Q207	G-8
Q210	C-3
Q211	G-37
Q212	H-37
Q213	H-37
Q214	H-3
Q215	H-35
Q216	E-35
Q217	F-7
Q222	I-8
Q223	H-8
Q224	H-9
Q225	G-8
Q226	G-34
Q227	G-34
Q228	H-32
Q229	I-8
Q230	H-33
Q231	H-34
Q232	G-34
Q233	I-6
Q235	F-38
Q236	G-38
Q241	G-37
Q243	C-37
Q244	E-38
Q245	E-38
Q250	H-32
Q251	H-9
Q252	G-6
Q253	F-34
Q254	G-8
Q501	B-34
Q502	B-35
Q503	B-37
Q551	I-6
Q552	I-5
Q553	I-5
Q602	A-28
Q603	G-25
Q604	B-8
Q605	A-8
Q606	B-8
Q607	A-8
Q608	B-30
Q609	G-24
Q610	F-23
Q611	G-23
Q612	F-28
Q614	F-27
Q615	D-24
Q617	B-28
Q618	E-15
Q619	B-28
Q620	H-23
Q621	A-31
Q622	C-30
Q623	B-31
Q624	A-31
Q625	B-31
Q626	G-23
Q627	H-23
Q628	G-23
Q629	F-28
Q630	G-27
Q631	G-27
Q632	F-25
Q633	E-25
Q634	G-28
Q635	F-24
Q638	C-31
Q639	C-30
Q641	A-27
Q642	F-27
Q644	G-24
Q645	E-15
Q646	G-24
Q647	G-24
Q648	B-28
Q801	F-30
Q802	G-31
Q803	F-30
Q804	F-31
Q806	E-10
Q807	E-11
Q809	E-7
Q810	E-8
Q811	I-29
Q812	I-29
Q816	G-31
Q817	G-31
Q818	I-28
Q819	H-12
Q820	G-30
Q822	I-28
Q824	H-31
Q825	G-31
Q826	G-11
Q827	I-27
Q828	I-28
Q830	D-30



CV-8 BOARD (CONDUCTOR SIDE)


CHECK POINT ARRAY (B)
1
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4
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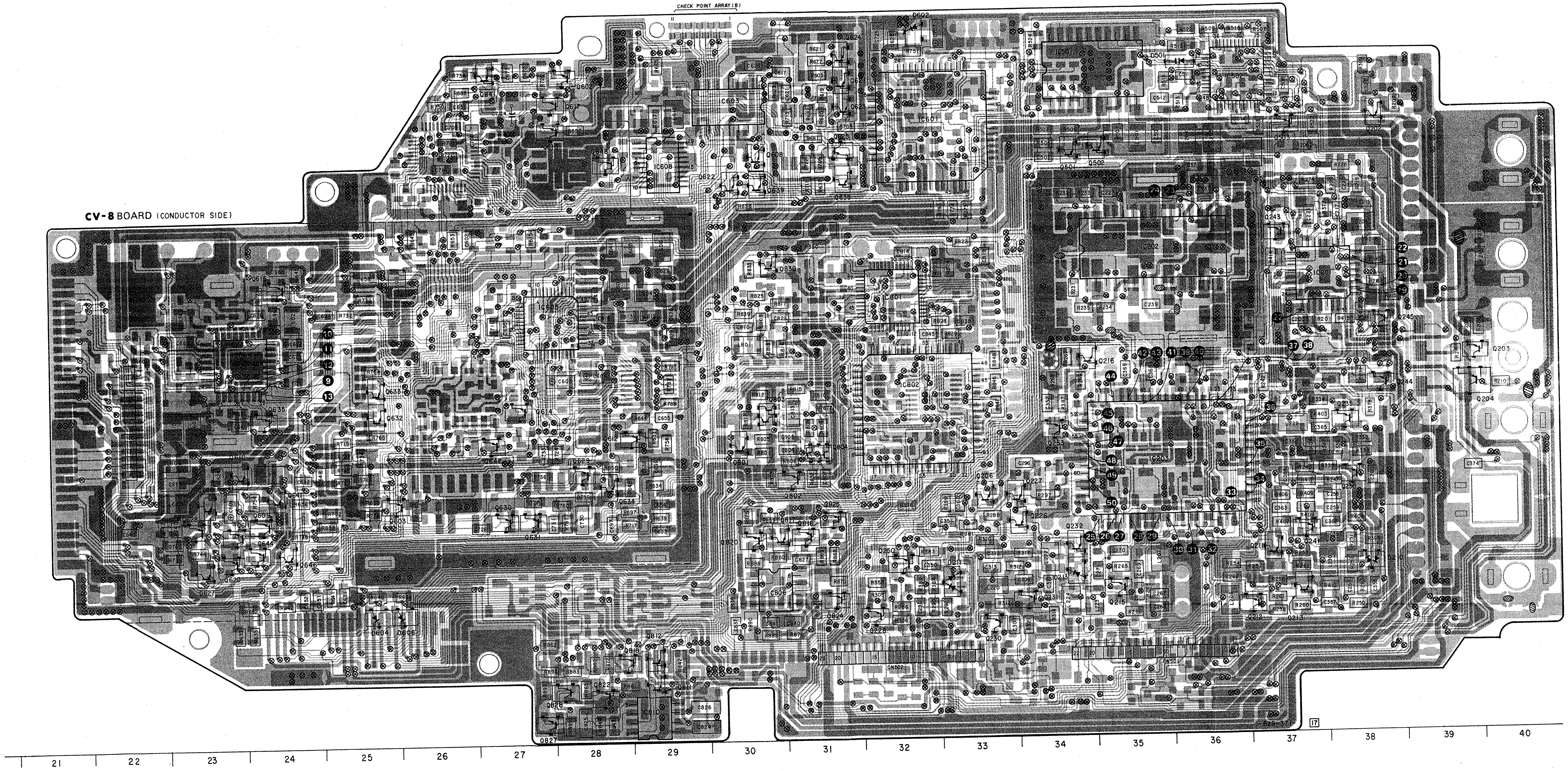
9
13
14
15
16
17
18
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33

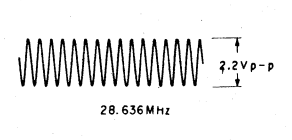
CV-8 BOARD (CONDUCTOR SIDE)


CHECK POINT ARRAY (B)
IC603
IC601
IC608
IC605
IC801
IC802
IC202
IC201
CN502
CN501
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40

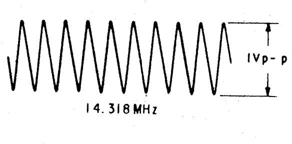
- Signal path

	VIDEO Signal			AUDIO Signal
	CHROMA	Y	Y/CHROMA	
REC	➡	⇛	⋙	
PB				

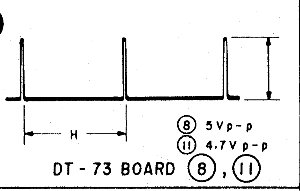
CV-8 BOARD (CAMERA)

❶


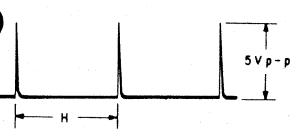
DT-73 BOARD ①

❷


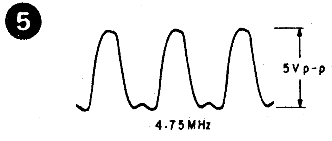
DT-73 BOARD ③

❸


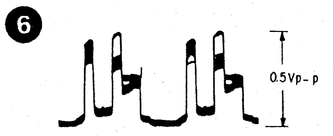
DT-73 BOARD ⑧,⑪

❹


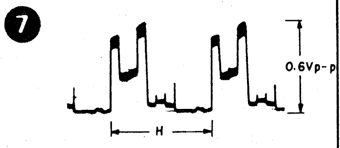
DT-73 BOARD ⑨

❺


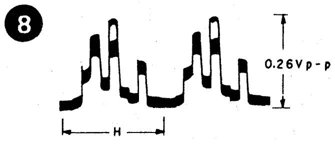
DT-73 BOARD ⑮,⑯

❻


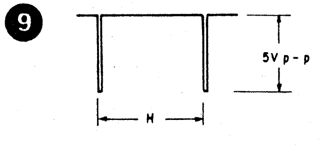
MX-7 BOARD ㉓

❼


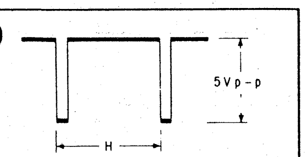
MX-7 BOARD ㉕

❽


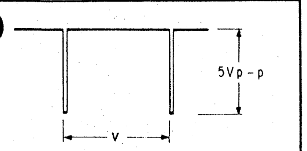
MX-7 BOARD ㉖

❾


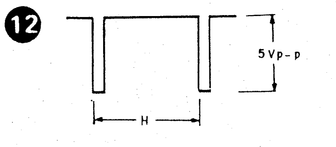
IC604 ①

❿


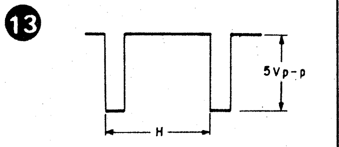
IC604 ㉙

⓫


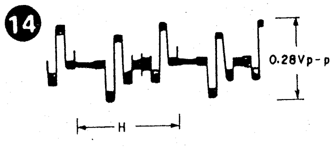
IC604 ㉚

⓬


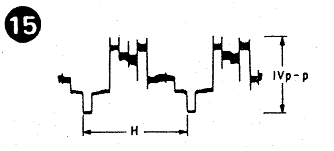
IC604 ㉛

⓭


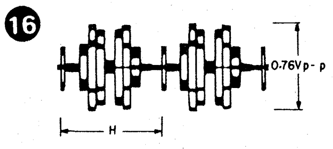
IC604 ㉜

⓮


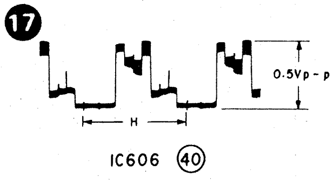
IC606 ①

⓯


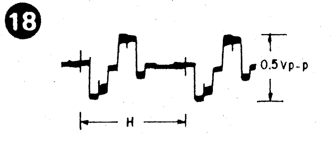
IC606 ⑳

⓰


IC606 ㉔

⓱


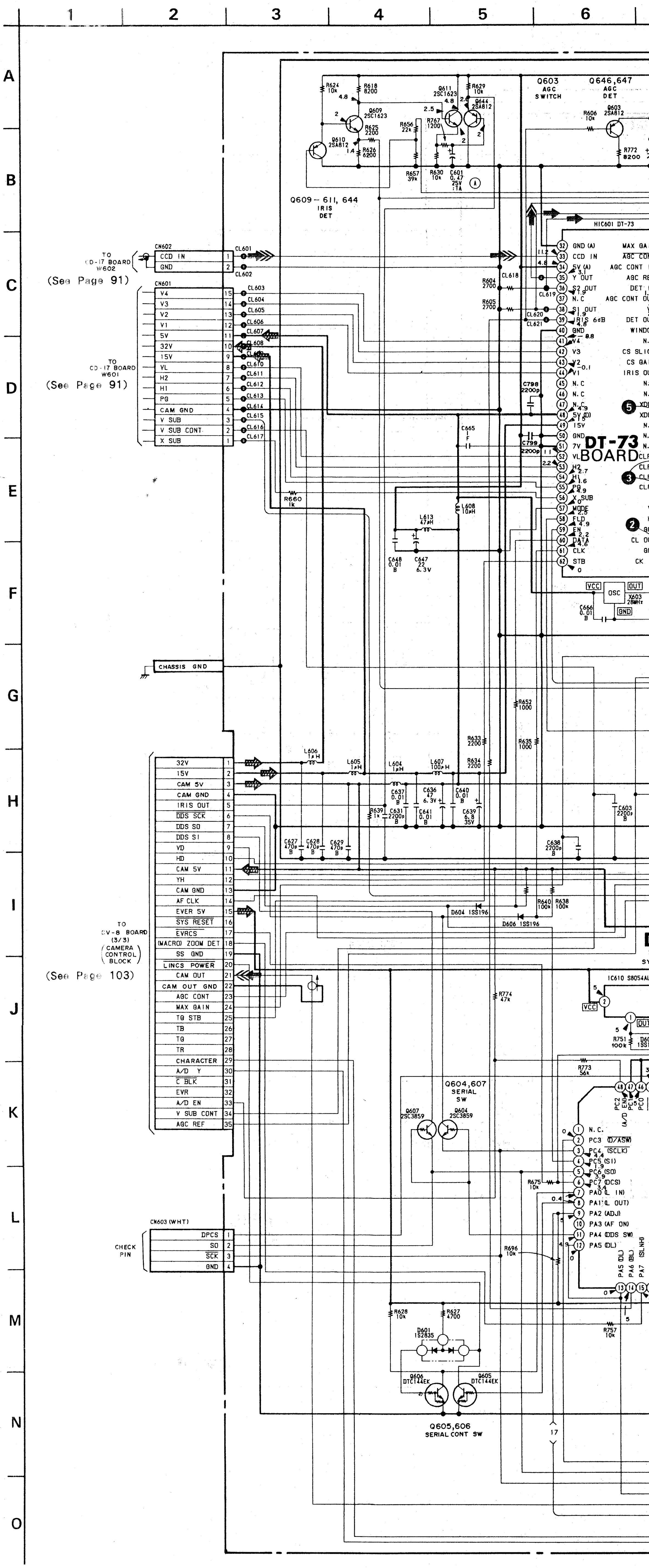
IC606 (40)

⓲


IC606 (45)

CV-8 (CAMERA) SCHEMATIC DIAGRAMS

— Ref. No. CV-8 BOARD: 2000 series —


1
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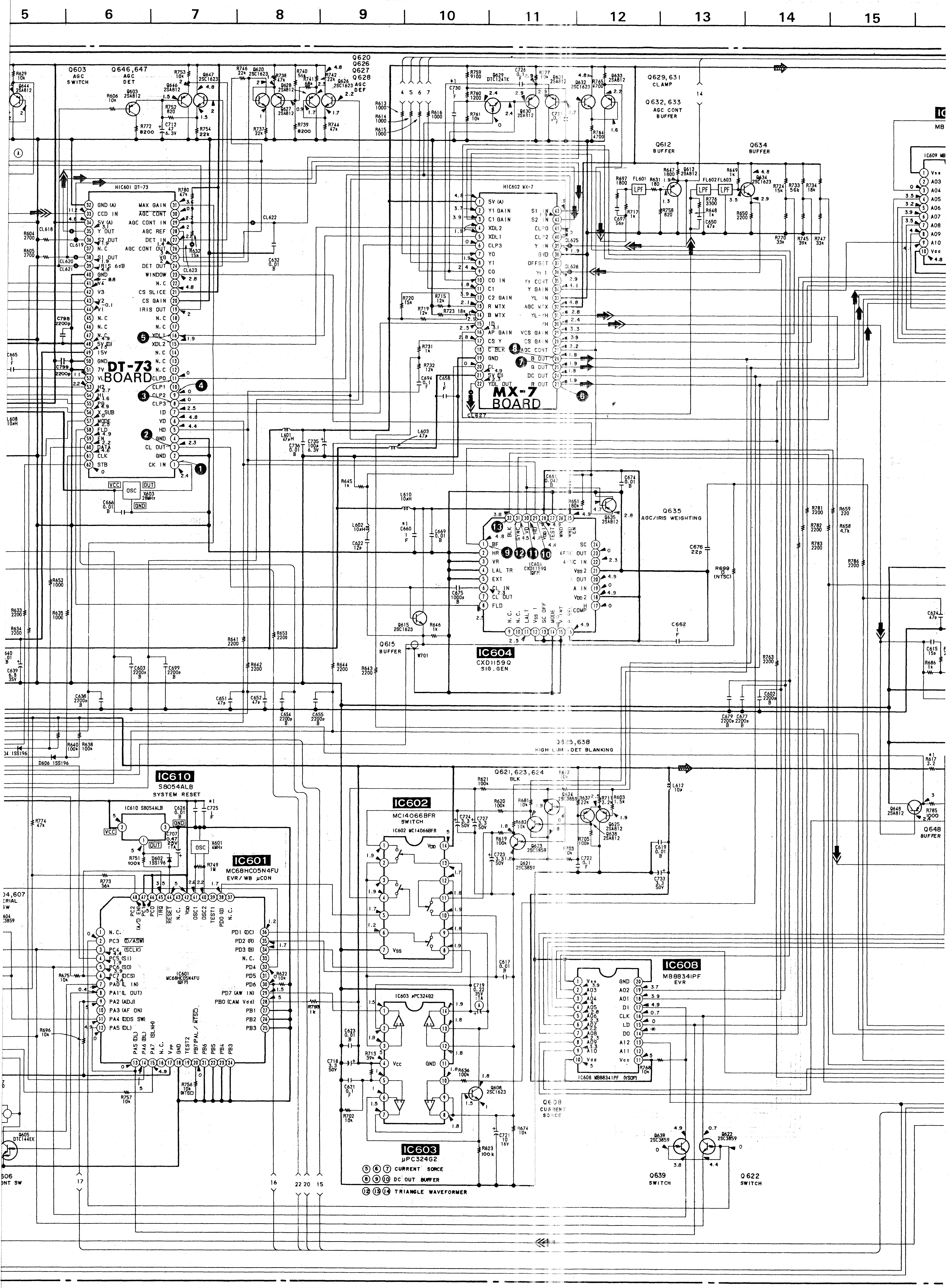
6
A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
Q609 – 611, 644
IRIS DET
Q603 AGC SWITCH
Q646,647 AGC DET
CN602
CCD IN
GND
TO CD-17 BOARD W602
(See Page 91)
CN601
V4
V3
V2
V1
5V
32V
15V
YL
H2
H1
PG
CAM GND
V SUB
V SUB CONT
X SUB
TO CD-17 BOARD W601
(See Page 91)
HIC601 DT-73
DT-73 BOARD
CHASSIS GND
32V
15V
CAM 5V
CAM GND
IRIS OUT
DDS SCK
DDS SO
DDS SI
VD
HD
CAM 5V
YH
CAM GND
AF CLK
EVER 5V
SYS RESET
EVRCS
(MACRO) ZOOM DET
SS GND
LINCS POWER
CAM OUT
CAM OUT GND
AGC CONT
MAX GAIN
TG STB
TB
TG
TR
CHARACTER
A/D Y
C BLK
EVR
A/D EN
V SUB CONT
AGC REF
TO CV-8 BOARD (3/3) (CAMERA CONTROL BLOCK)
(See Page 103)
CN603 (WHT)
DPCS
SO
SCK
GND
CHECK PIN
Q604,607 SERIAL SW
Q605,606 SERIAL CONT SW
IC610 S8054AL
D604 1SS196
D606 1SS196
D601 1S2835


5
6
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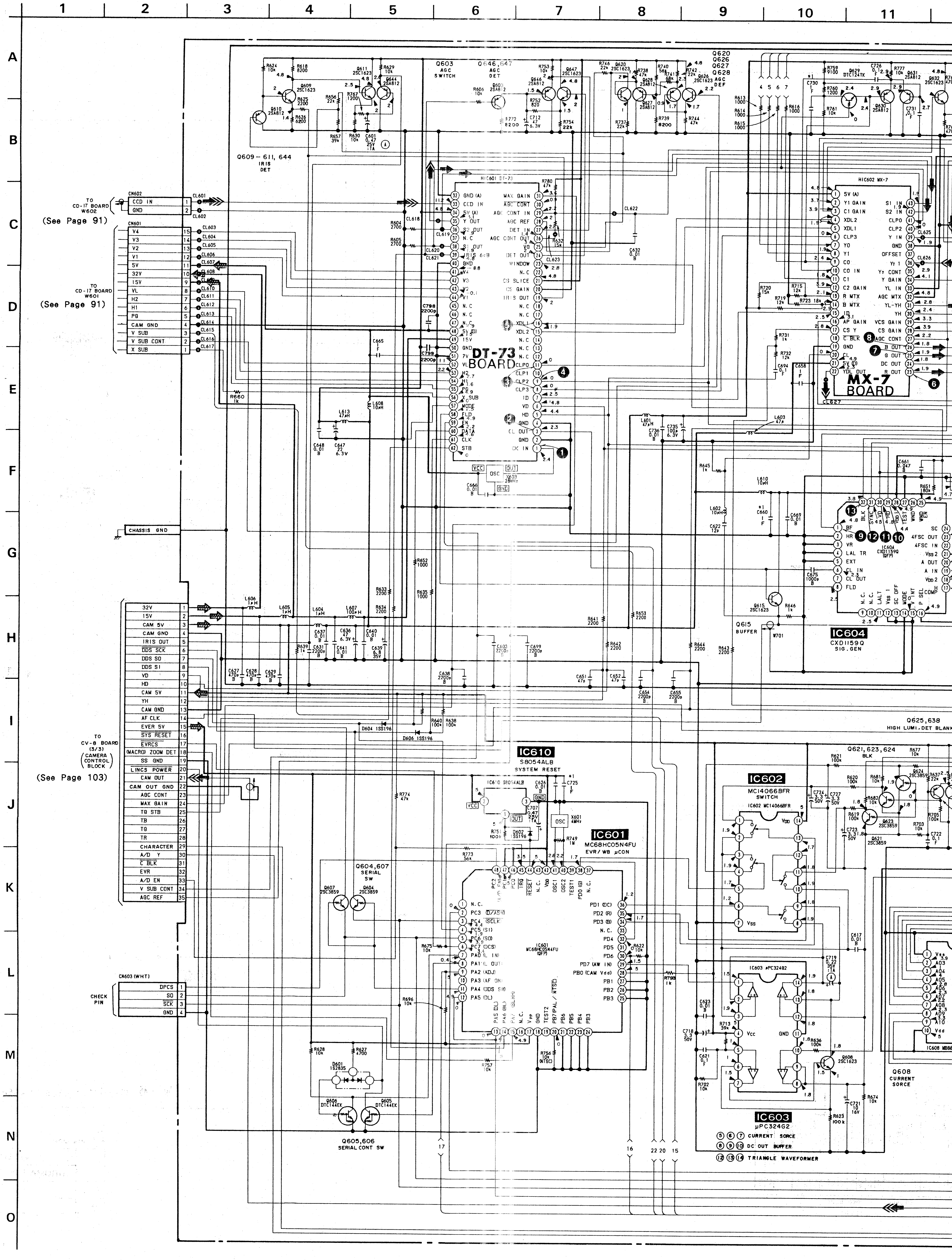
10
11
12
13
14
15
Q603 AGC SWITCH
Q646,647 AGC DET
Q620 Q626 Q627 Q628 AGC DEF
Q629,631 CLAMP
Q632,633 AGC CONT BUFFER
Q612 BUFFER
Q634 BUFFER
HIC601 DT-73
DT-73 BOARD
HIC602 MX-7
MX-7 BOARD
IC604
CXD1159Q
SIG.GEN
Q635 AGC/IRIS WEIGHTING
Q615 BUFFER
Q625,638 HIGH LUM DET BLANKING
Q621,623,624 BLK
IC610
S8054ALB
SYSTEM RESET
IC601
MC68HC05N4FU
EVR/WB µCON
IC602
MC14066BFR
SWITCH
IC603
µPC324G2
⑤⑥⑦ CURRENT SORCE
⑧⑨⑩ DC OUT BUFFER
⑫⑬⑭ TRIANGLE WAVEFORMER
IC608
MB88341PF
EVR
Q608 CURRENT SORCE
Q639 SWITCH
Q622 SWITCH
Q648 BUFFER
D606 1SS196
Q605 DTC144EK
X603 28MHz
X601 4MHz
GND (A)
CCD IN
5V (A)
Y OUT
S2 OUT
N.C
S1 OUT
IRIS 6dB
MAX GAIN
AGC CONT
AGC CONT IN
AGC REF
DET IN
AGC CONT OUT
VG
DET OUT
WINDOW
CS SLICE
CS GAIN
IRIS OUT
XDL1
XDL2
CLPO
CLP1
CLP2
CLP3
ID
VD
HD
GND
CL OUT
CK IN
STB
CLK
DATA
EN
FLD
MODE
X SUB
5V (A)
Y1 GAIN
C1 GAIN
XDL2
XDL1
CLP3
YO
Y1
CO
CO IN
C1
C2 GAIN
R MTX
B MTX
AP GAIN
CS Y
C BLK
S1 IN
S2 IN
CLPO
CLP2
Y IN
OFFSET
Y GAIN
YL IN
AGC MTX
VCS GAIN
CS GAIN
AGC CONT
B OUT
G OUT
DC OUT
R OUT
BF
HR
VR
LAL TR
EXT
CL IN
CL OUT
FLD
SC
4FSC OUT
4FSC IN
VSS 2
A OUT
A IN
VDD 2
COMP
PC2
PC3 (D/A SW)
PC4 (SCLK)
PC5 (S1)
PC6 (SO)
PC7 (DCS)
PAO (L IN)
PA1 (L OUT)
PA2 (ADJ)
PA3 (AF ON)
PA4 (DDS SW)
PA5 (DL)
PD1 (DC)
PD2 (R)
PD3 (B)
PD4
PD5
PD6
PD7 (AW IN)
PBO (CAM Vdd)
PB1
PB2
PB3
RESET
OSC1
OSC2
TEST1
TEST2
PB7 (PAL/NTSC)
Vss
A03
A04
A05
A06
A07
A08
A09
A10
Vdd
GND
A02
A01
DI
CLK
LD
DO
A12
A11
Vcc
LPF
FL601
FL602
FL603
17
16
22 20 15
14

CV-8 (CAMERA) SCHEMATIC DIAGRAMS

— Ref. No. CV-8 BOARD: 2000 series —


1
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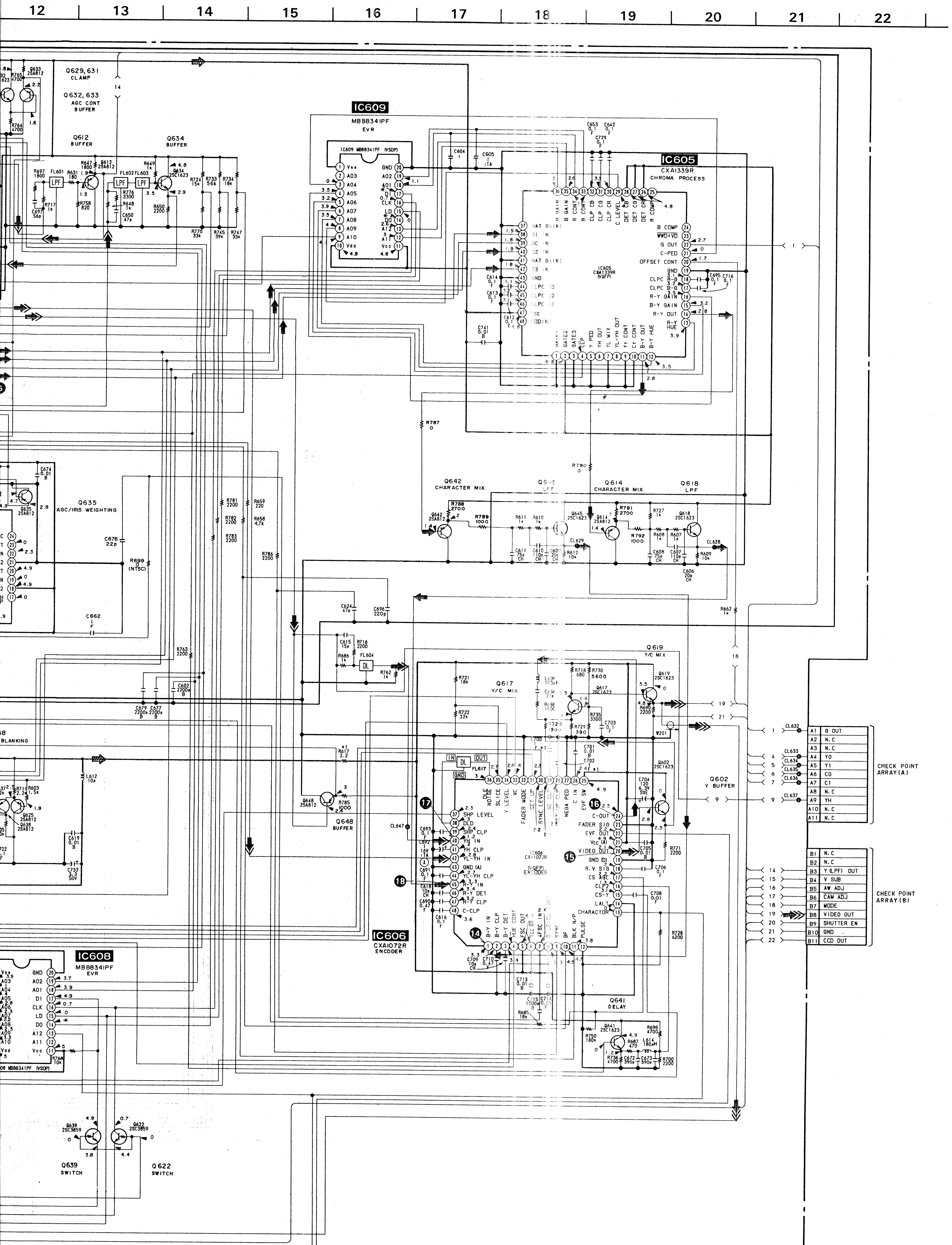
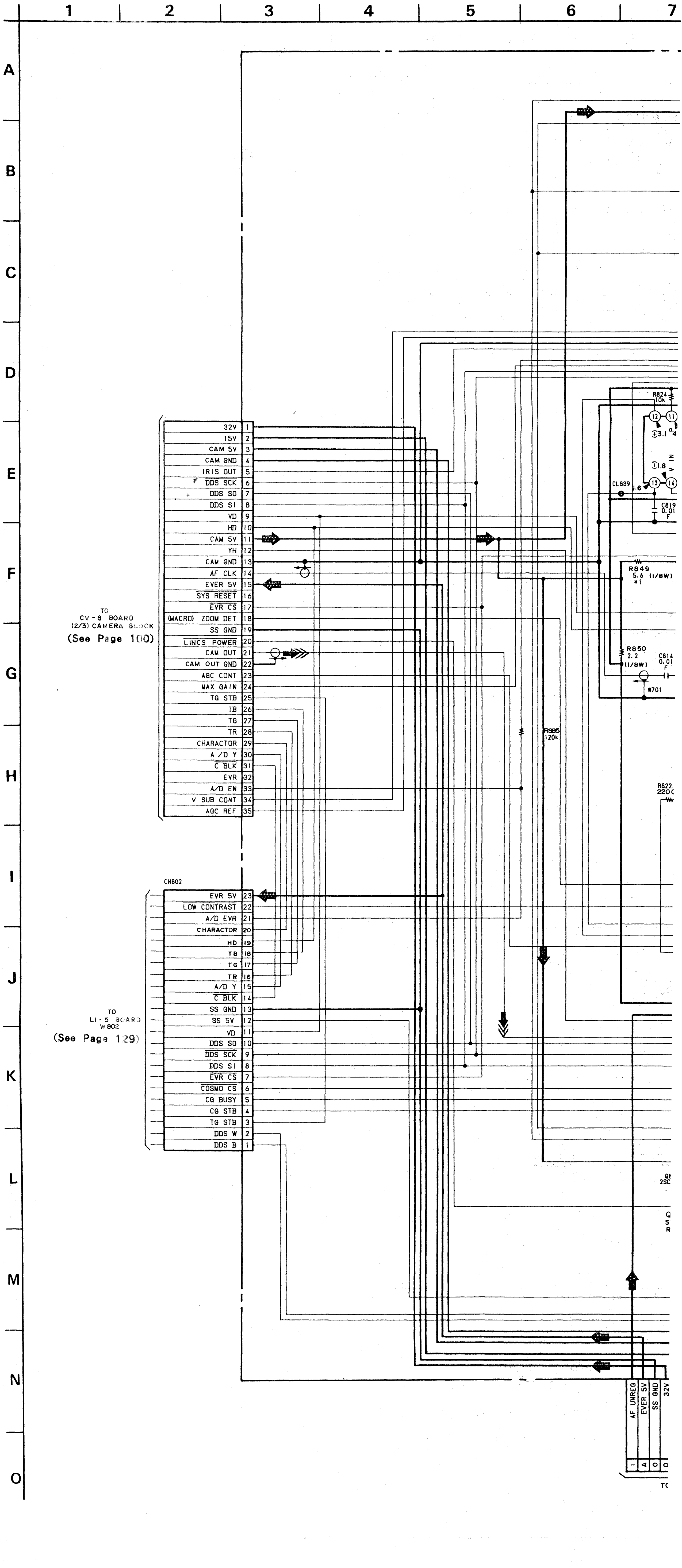
11
A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
Q609 – 611, 644
IRIS DET
Q603
AGC SWITCH
Q646, 647
AGC DET
Q620
Q626
Q627
Q628
AGC DEF
TO CD-17 BOARD W602
(See Page 91)
CN602
CCD IN
GND
TO CD-17 BOARD W601
(See Page 91)
CN601
V4
V3
V2
V1
5V
32V
15V
VL
H2
H1
PG
CAM GND
V SUB
V SUB CONT
X SUB
CHASSIS GND
HIC601 DT-73
DT-73 BOARD
HIC602 MX-7
MX-7 BOARD
IC604
CXD1159Q
SIG. GEN
Q615
BUFFER
Q625, 638
HIGH LUMI. DET BLANK
Q621, 623, 624
BLK
TO CV-8 BOARD (3/3)
(CAMERA CONTROL BLOCK)
(See Page 103)
32V
15V
CAM 5V
CAM GND
IRIS OUT
DDS SCK
DDS SO
DDS SI
VD
HD
CAM 5V
YH
CAM GND
AF CLK
EVER 5V
SYS RESET
EVRCS
(MACRO) ZOOM DET
SS GND
LINCS POWER
CAM OUT
CAM OUT GND
AGC CONT
MAX GAIN
TG STB
TB
TG
TR
CHARACTER
A/D Y
C BLK
EVR
A/D EN
V SUB CONT
AGC REF
IC610
S8054ALB
SYSTEM RESET
IC601
MC68HC05N4FU
EVR/WB μCON
IC602
MC14066BFR
SWITCH
IC603
μPC324G2
⑤⑥⑦ CURRENT SORCE
⑧⑨⑩ DC OUT BUFFER
⑫⑬⑭ TRIANGLE WAVEFORMER
Q604, 607
SERIAL SW
Q605, 606
SERIAL CONT SW
Q608
CURRENT SORCE
CN603 (WHT)
CHECK PIN
DPCS
SO
SCK
GND
X601
4MHz
X603
28MHz
17
16
22
20
15


12
13
14
15
16
17
18
19
20
21
22
Q629, 631 CLAMP
Q632, 633 AGC CONT BUFFER
Q612 BUFFER
Q634 BUFFER
IC609
MB88341PF
EVR
IC605
CXA1339R
CHROMA PROCESS
Q642 CHARACTER MIX
Q645 LPF
Q614 CHARACTER MIX
Q618 LPF
Q635 AGC/IRIS WEIGHTING
Q619 Y/C MIX
Q617 Y/C MIX
Q602 Y BUFFER
Q648 BUFFER
IC606
CXA1072R
ENCODER
Q641 DELAY
IC608
MB88341PF
EVR
Q639 SWITCH
Q622 SWITCH
BLANKING
A1 G OUT
A2 N.C
A3 N.C
A4 Y0
A5 Y1
A6 C0
A7 C1
A8 N.C
A9 YH
A10 N.C
A11 N.C
CHECK POINT ARRAY (A)
B1 N.C
B2 N.C
B3 Y (LPF) OUT
B4 V SUB
B5 AW ADJ
B6 CAM ADJ
B7 MODE
B8 VIDEO OUT
B9 SHUTTER EN
B10 GND
B11 CCD OUT
CHECK POINT ARRAY (B)

CV-8 BOARD (2/3)(CAMERA BLOCK)

CV-8 (CAMERA) SCHEMATIC DIAGRAMS

— Ref. No. CV-8 BOARD: 2000 series —


1
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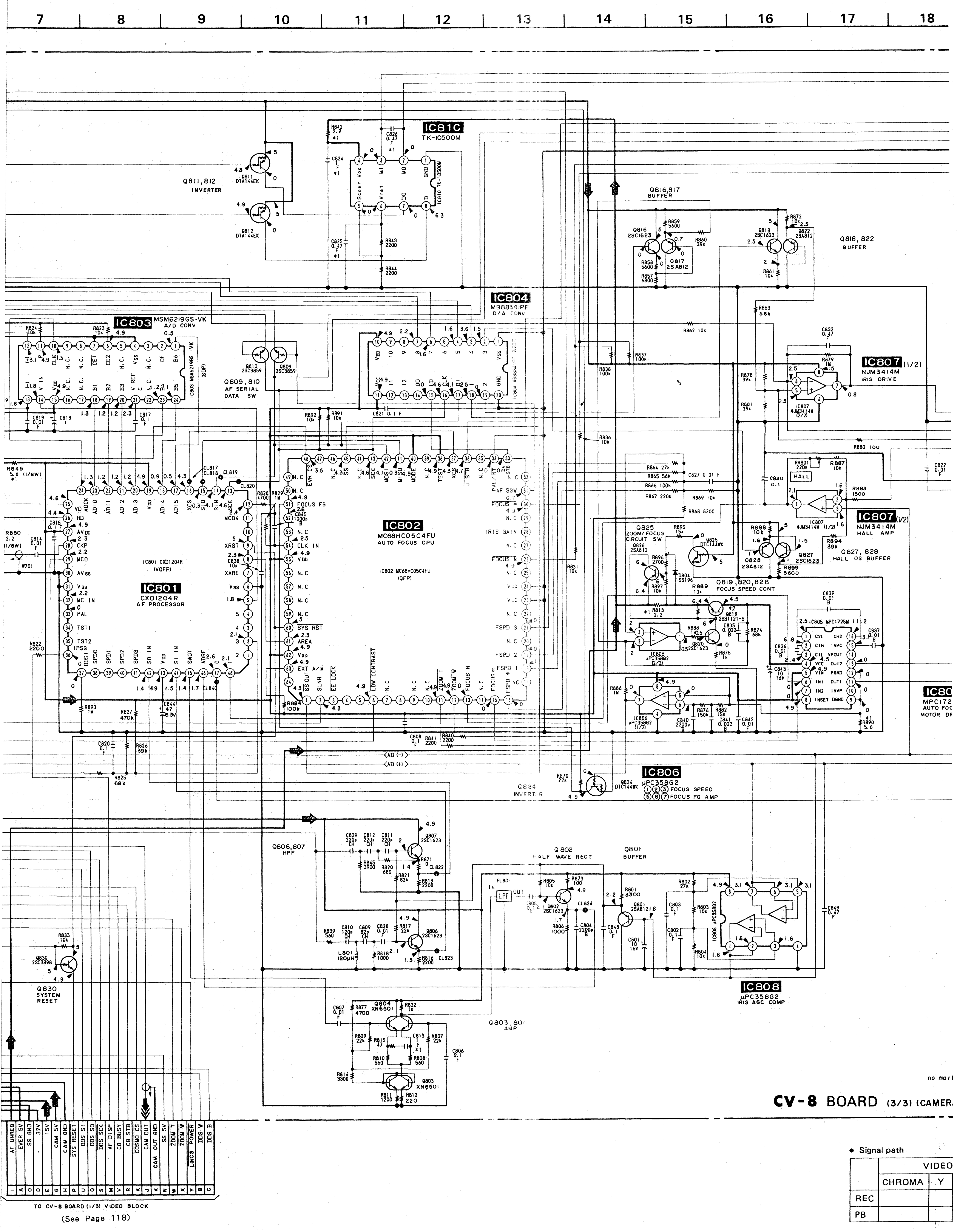
6
7
A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
32V 1
15V 2
CAM 5V 3
CAM GND 4
IRIS OUT 5
DDS SCK 6
DDS SO 7
DDS SI 8
VD 9
HD 10
CAM 5V 11
YH 12
CAM GND 13
AF CLK 14
EVER 5V 15
SYS RESET 16
EVR CS 17
(MACRO) ZOOM DET 18
SS GND 19
LINCS POWER 20
CAM OUT 21
CAM OUT GND 22
AGC CONT 23
MAX GAIN 24
TG STB 25
TB 26
TG 27
TR 28
CHARACTOR 29
A /D Y 30
C BLK 31
EVR 32
A/D EN 33
V SUB CONT 34
AGC REF 35
TO
CV-8 BOARD
(2/3) CAMERA BLOCK
(See Page 100)
CN802
EVR 5V 23
LOW CONTRAST 22
A/D EVR 21
CHARACTOR 20
HD 19
TB 18
TG 17
TR 16
A/D Y 15
C BLK 14
SS GND 13
SS 5V 12
VD 11
DDS SO 10
DDS SCK 9
DDS SI 8
EVR CS 7
COSMO CS 6
CG BUSY 5
CG STB 4
TG STB 3
DDS W 2
DDS B 1
TO
LI-5 BOARD
W802
(See Page 129)
R824
10k
12
11
3.1
4
1.8
13
14
1.6
CL839
C819
0.01
F
R849
5.6 (1/8W)
*1
R850
2.2
(1/8W)
C814
0.01
F
W701
R885
120k
R822
220
AF UNREG
EVER 5V
SS GND
32V
TO

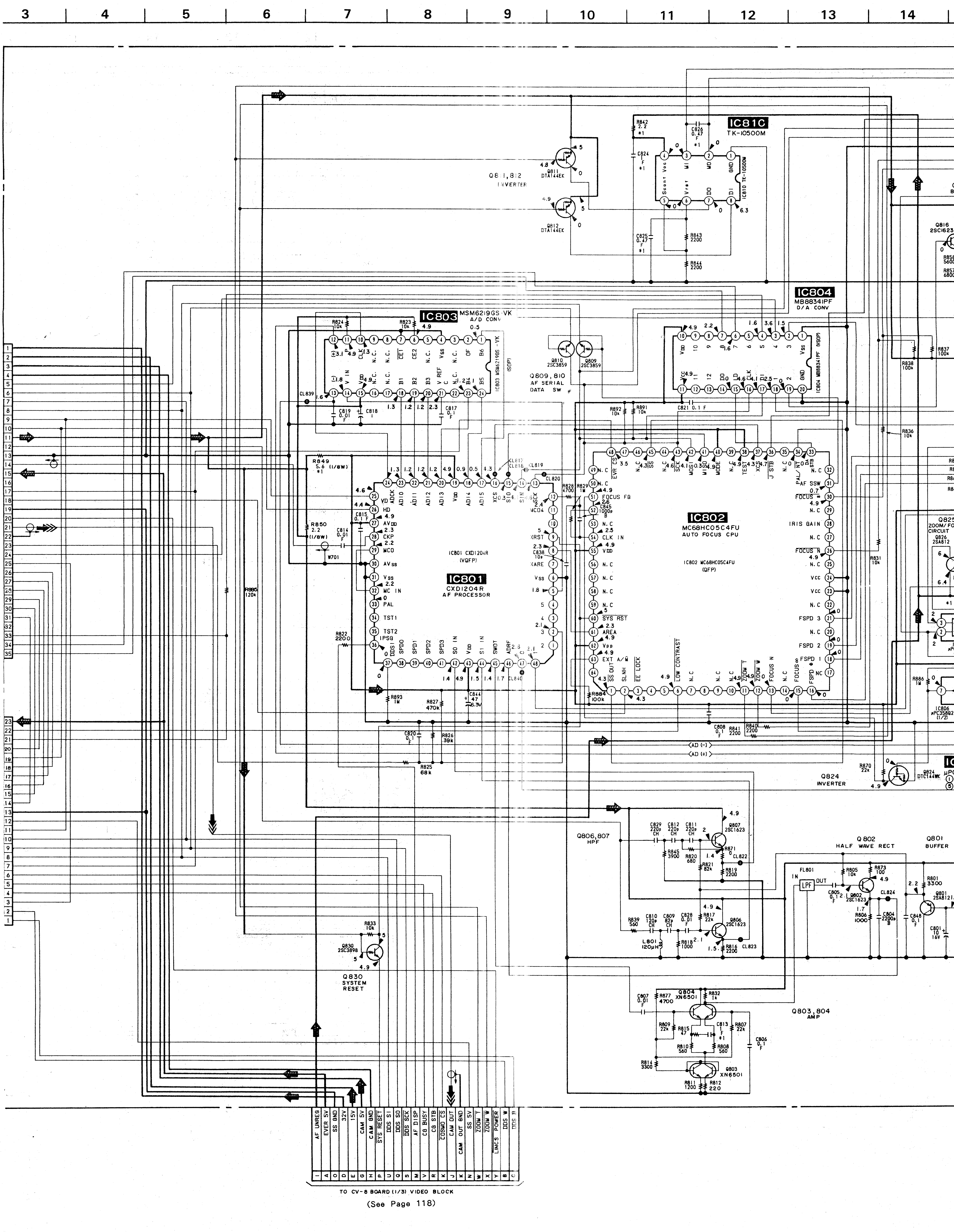

7
8
9
10
11
12
13
14
15
16
17
18
IC810
TK-10500M
IC804
MB88341PF
D/A CONV
IC803
MSM6219GS-VK
A/D CONV
IC801
CXD1204R
AF PROCESSOR
IC802
MC68HC05C4FU
AUTO FOCUS CPU
IC807 (1/2)
NJM3414M
IRIS DRIVE
IC807 (1/2)
NJM3414M
HALL AMP
IC806
µPC358G2
①②③ FOCUS SPEED
⑤⑥⑦ FOCUS FG AMP
IC808
µPC358G2
IRIS AGC COMP
IC80
MPC172
AUTO FOC
MOTOR DR
Q811, 812
INVERTER
Q816, 817
BUFFER
Q818, 822
BUFFER
Q809, 810
AF SERIAL
DATA SW
Q825
ZOOM/FOCUS
CIRCUIT SW
Q827, 828
HALL OS BUFFER
Q819, 820, 826
FOCUS SPEED CONT
Q824
INVERTER
Q806, 807
HPF
Q802
HALF WAVE RECT
Q801
BUFFER
Q803, 804
AMP
Q830
SYSTEM
RESET
AF UNREG
EVER 5V
SS GND
32V
15V
CAM 5V
CAM GND
SYS RESET
DDS SI
DDS SO
DDS SCK
AF DISP
CB BUSY
CB STB
COSMO CS
CAM OUT
CAM OUT GND
SS 5V
ZOOM T
ZOOM W
LINCS POWER
DDS W
DDS B
TO CV-8 BOARD (1/3) VIDEO BLOCK
(See Page 118)

no mar

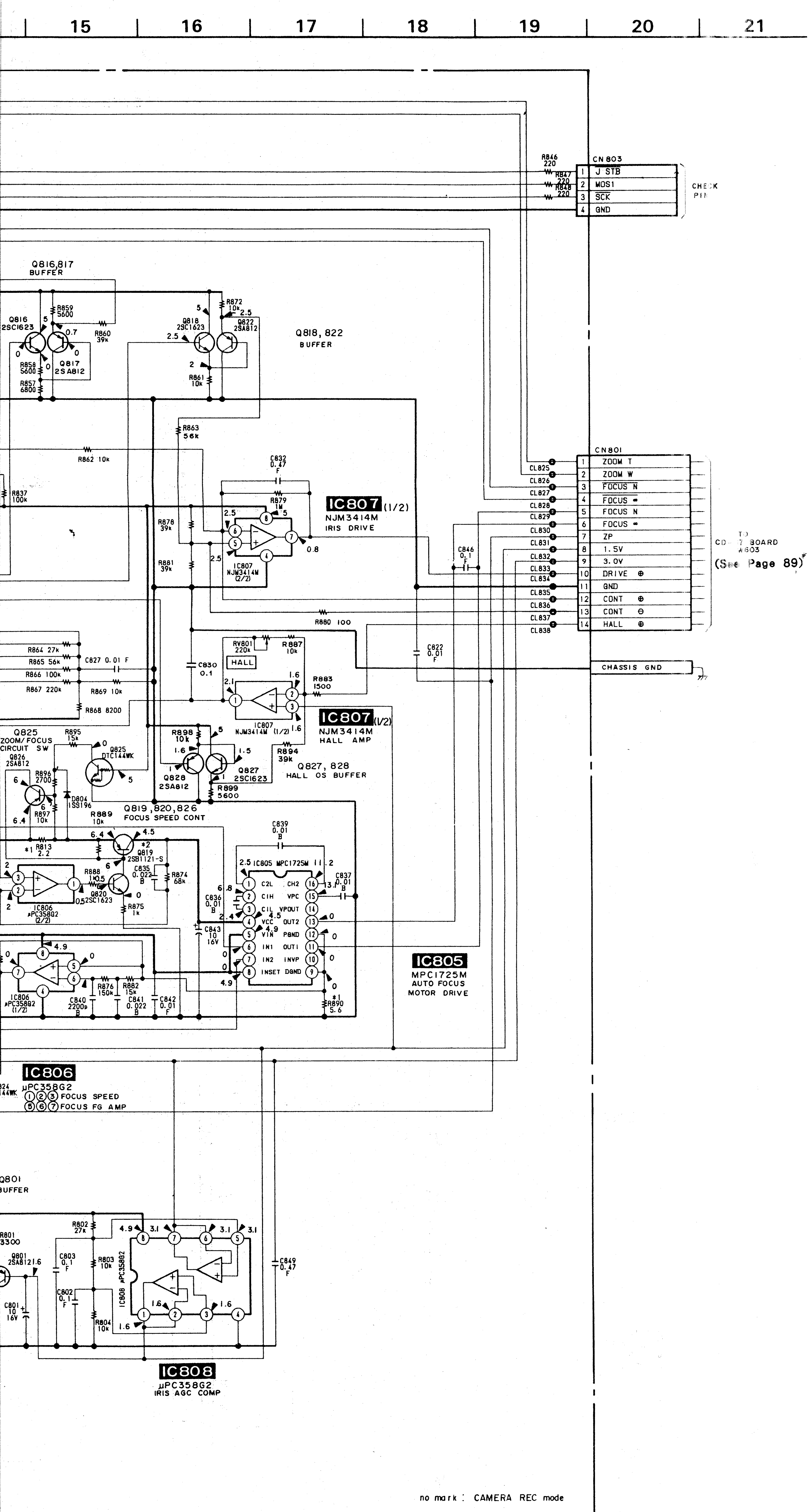
CV-8 BOARD (3/3) (CAMER

- Signal path

	VIDEO	
	CHROMA	Y
REC		
PB		


3
4
5
6
7
8
9
10
11
12
13
14
IC81C
TK-10500M
Q811,812
INVERTER
Q811
DTA144EK
Q812
DTA144EK
R842 2.2 *1
C826 0.47 F *1
C824 1 F *1
C825 0.47 F *1
R843 2200
R844 2200
IC810 TK-10500M
IC803
MSM6219GS-VK
A/D CONV
IC804
MB8834IPF
D/A CONV
Q810 2SC3859
Q809 2SC3859
Q809,810
AF SERIAL DATA SW
IC801
CXD1204R
AF PROCESSOR
IC801 CXD1204R (VQFP)
IC802
MC68HC05C4FU
AUTO FOCUS CPU
IC802 MC68HC05C4FU (QFP)
R849 5.6 (1/8W) *1
R850 2.2 (1/8W)
W701
R885 120k
R822 2200
R893 1M
R827 470k
C844 47 6.3V
C820 0.1 F
R826 39k
R825 68k
R884 100k
C808 0.1 F
R841 2200
R840 2200
R836 10k
R837 100k
R838 100k
R831 10k
R886 1M
R870 22k
Q824 DTC144WK
Q824 INVERTER
Q816 2SC1623
Q825
ZOOM/FOCUS CIRCUIT
Q826 2SA812
IC806 μPC358G2 (1/2)
Q806,807 HPF
Q807 2SC1623
Q806 2SC1623
L801 120μH
Q802 HALF WAVE RECT
Q802 2SC1623
Q801 BUFFER
Q801 2SA812
FL801
LPF
IN
OUT
Q803,804 AMP
Q804 XN6501
Q803 XN6501
Q830 2SC3898
Q830 SYSTEM RESET
R833 10k
AF UNREG
EVER 5V
SS GND
32V
15V
CAM 5V
CAM GND
SYS RESET
DDS SI
DDS SO
DDS SCK
AF DISP
CG BUSY
CG STB
COSMO CS
CAM OUT
CAM OUT GND
SS 5V
ZOOM T
ZOOM W
LINCS POWER
DDS W
DDS B
FOCUS FG
FOCUS N
IRIS GAIN
AF SSW
SYS RST
EXT A/M
SS OUT
SLNH
EE LOCK
LOW CONTRAST
FSPD 1
FSPD 2
FSPD 3
AD (-)
AD (+)
CL839
CL817
CL818
CL819
CL820
CL822
CL823
CL824
CL840

TO CV-8 BOARD (1/3) VIDEO BLOCK
(See Page 118)


15
16
17
18
19
20
21
CN803
J STB
MOSI
SCK
GND
CHECK PIN
Q816,817 BUFFER
Q818, 822 BUFFER
IC807 (1/2) NJM3414M IRIS DRIVE
CN801
ZOOM T
ZOOM W
FOCUS N
FOCUS ⊖
FOCUS N
FOCUS ⊖
ZP
1.5V
3.0V
DRIVE ⊕
GND
CONT ⊕
CONT ⊖
HALL ⊕
TO CD-7 BOARD A603
(See Page 89)
CHASSIS GND
IC807 (1/2) NJM3414M HALL AMP
Q827, 828 HALL OS BUFFER
Q825 ZOOM/FOCUS CIRCUIT SW
Q819,820,826 FOCUS SPEED CONT
IC805 MPC1725M AUTO FOCUS MOTOR DRIVE
IC806 μPC358G2 ①②③ FOCUS SPEED ⑤⑥⑦ FOCUS FG AMP
Q801 BUFFER
IC808 μPC358G2 IRIS AGC COMP

no mark : CAMERA REC mode

CV-8 BOARD (3/3) (CAMERA CONTROL BLOCK)

- Signal path

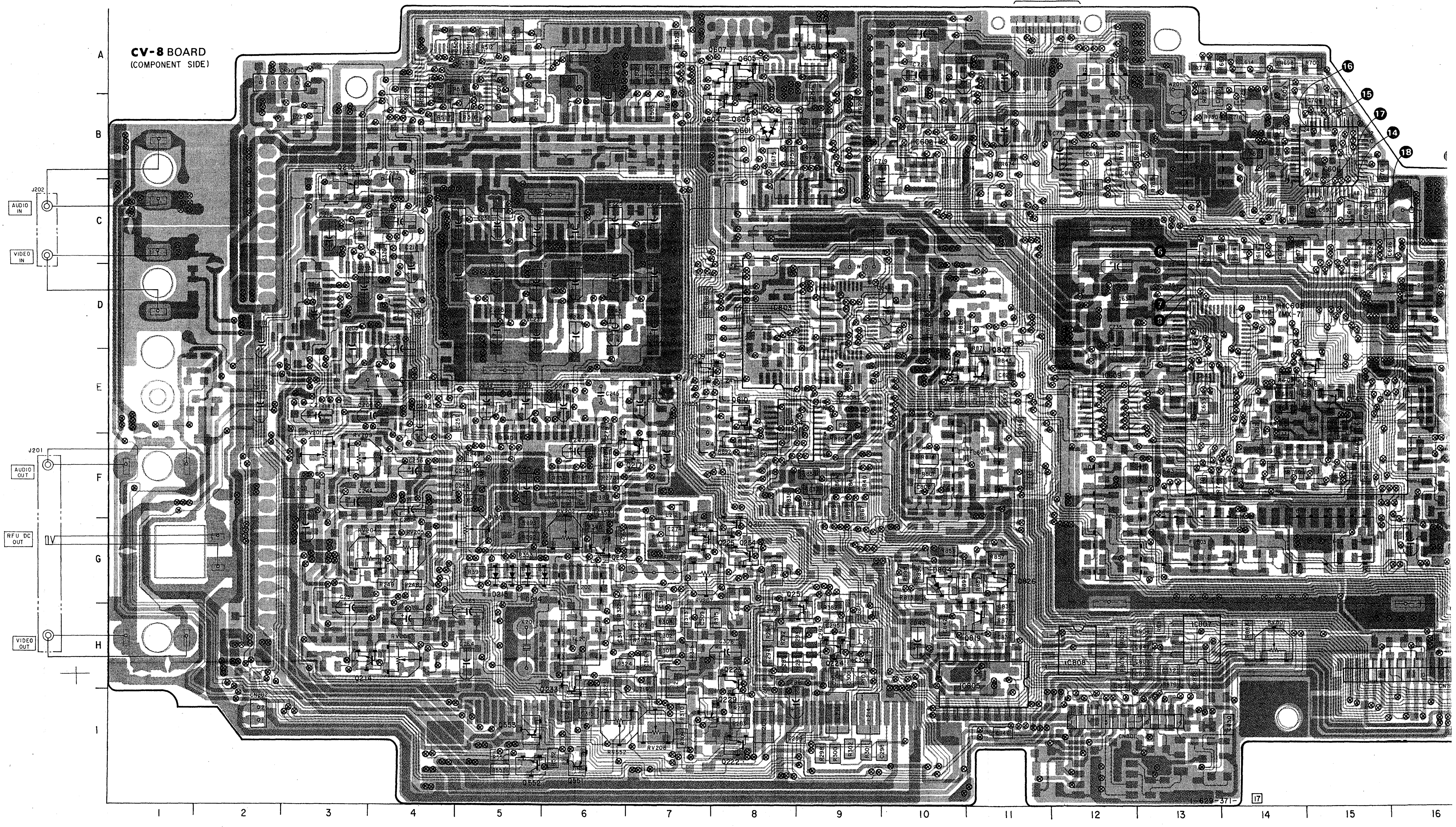
	VIDEO Signal			AUDIO Signal
	CHROMA	Y	Y/CHROMA	
REC			⇛	
PB				

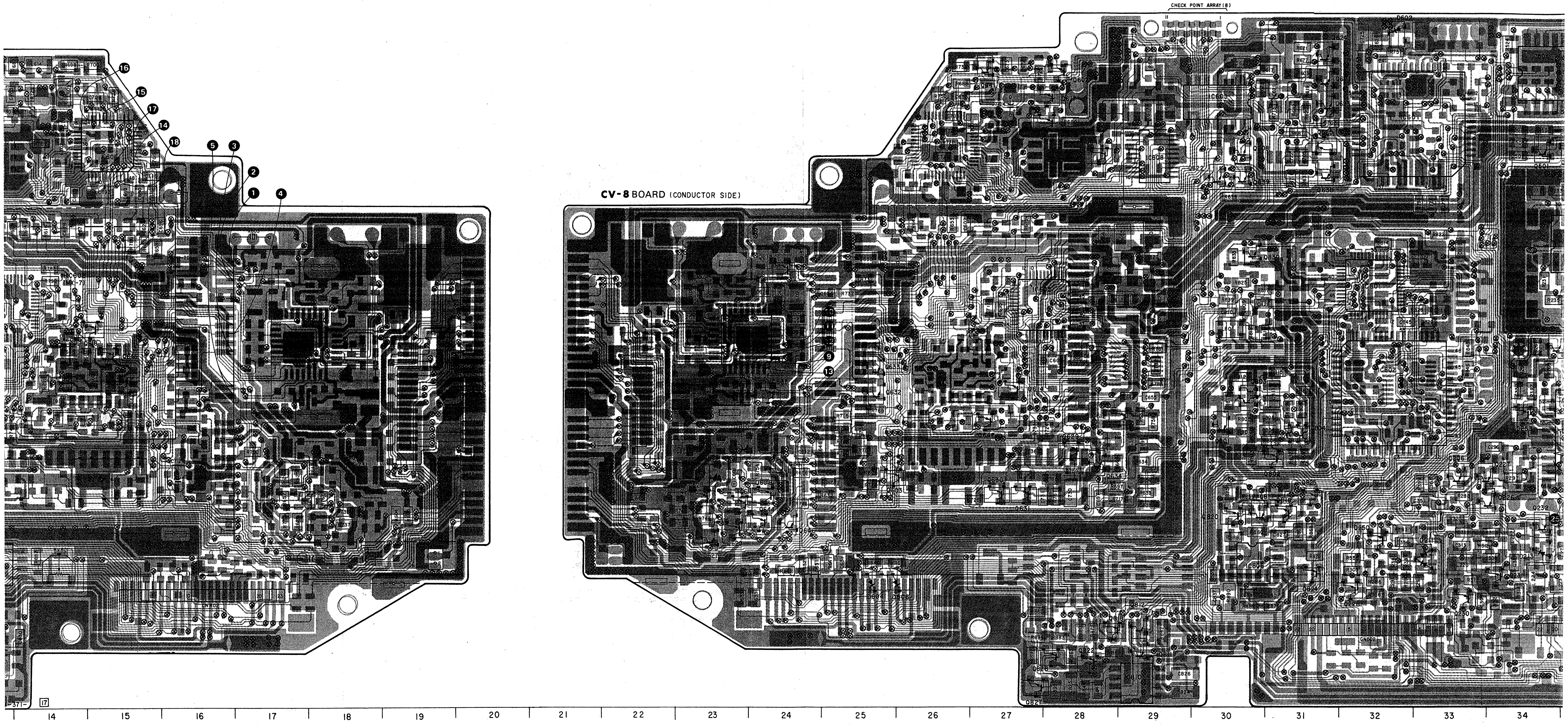
CV-8 (CAMERA, VIDEO PROCESS) PRINTED WIRING BOARDS

— Ref. No. CV-8 BOARD: 2000 series —

CV-8 BOARD

D210	H-38
D211	H-33
D213	H-34
D214	G-5
D215	G-5
D501	A-36
D601	B-8
D602	A-32
D604	H-25
D606	H-26
D804	G-10
IC201	D-38
IC202	D-35
IC203	F-35
IC501	A-34
IC502	A-36
IC601	B-32
IC602	B-10
IC603	B-30
IC604	E-23
IC605	D-27
IC606	B-15
IC608	B-29
IC609	E-12
IC610	A-9
IC801	D-32
IC802	E-32
IC803	D-8
IC804	E-8
IC805	H-11
IC806	H-30
IC807	H-13
IC808	H-12
IC810	I-29
Q202	B-38
Q203	E-40
Q204	E-39
Q206	G-33
Q207	G-8
Q210	C-3
Q211	G-37
Q212	H-37
Q213	H-37
Q214	H-3
Q215	H-35
Q216	E-35
Q217	F-7
Q222	I-8
Q223	H-8
Q224	H-9
Q225	G-8
Q226	G-34
Q227	G-34
Q228	H-32
Q229	I-8
Q230	H-33
Q231	H-34
Q232	G-34
Q233	I-6
Q235	F-38
Q236	G-38
Q241	G-37
Q243	C-37
Q244	E-38
Q245	E-38
Q250	H-32
Q251	H-9
Q252	G-6
Q253	F-34
Q254	G-8
Q501	B-34
Q502	B-35
Q503	B-37
Q551	I-6
Q552	I-5
Q553	I-5
Q602	A-28
Q603	G-25
Q604	B-8
Q605	A-8
Q606	B-8
Q607	A-8
Q608	B-30
Q609	G-24
Q610	F-23
Q611	G-23
Q612	F-28
Q614	F-27
Q615	D-24
Q617	B-28
Q618	E-15
Q619	B-28
Q620	H-23
Q621	A-31
Q622	C-30
Q623	B-31
Q624	A-31
Q625	B-31
Q626	G-23
Q627	H-23
Q628	G-23
Q629	F-28
Q630	G-27
Q631	G-27
Q632	F-25
Q633	E-25
Q634	G-28
Q635	F-24
Q638	C-31
Q639	C-30
Q641	A-27
Q642	F-27
Q644	G-24
Q645	E-15
Q646	G-24
Q647	G-24
Q648	B-28
Q801	F-30
Q802	G-31
Q803	F-30
Q804	F-31
Q806	E-10
Q807	E-11
Q809	E-7
Q810	E-8
Q811	I-29
Q812	I-29
Q816	G-31
Q817	G-31
Q818	I-28
Q819	H-12
Q820	G-30
Q822	I-28
Q824	H-31
Q825	G-31
Q826	G-11
Q827	I-27
Q828	I-28
Q830	D-30





CV-8 BOARD (CONDUCTOR SIDE)

CHECK POINT ARRAY (B)
⑯
⑮
⑰
⑭
⑱
⑤
③
②
①
④
⑨
⑬
17
14
15
16
17
18
19
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21
22
23
24
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27
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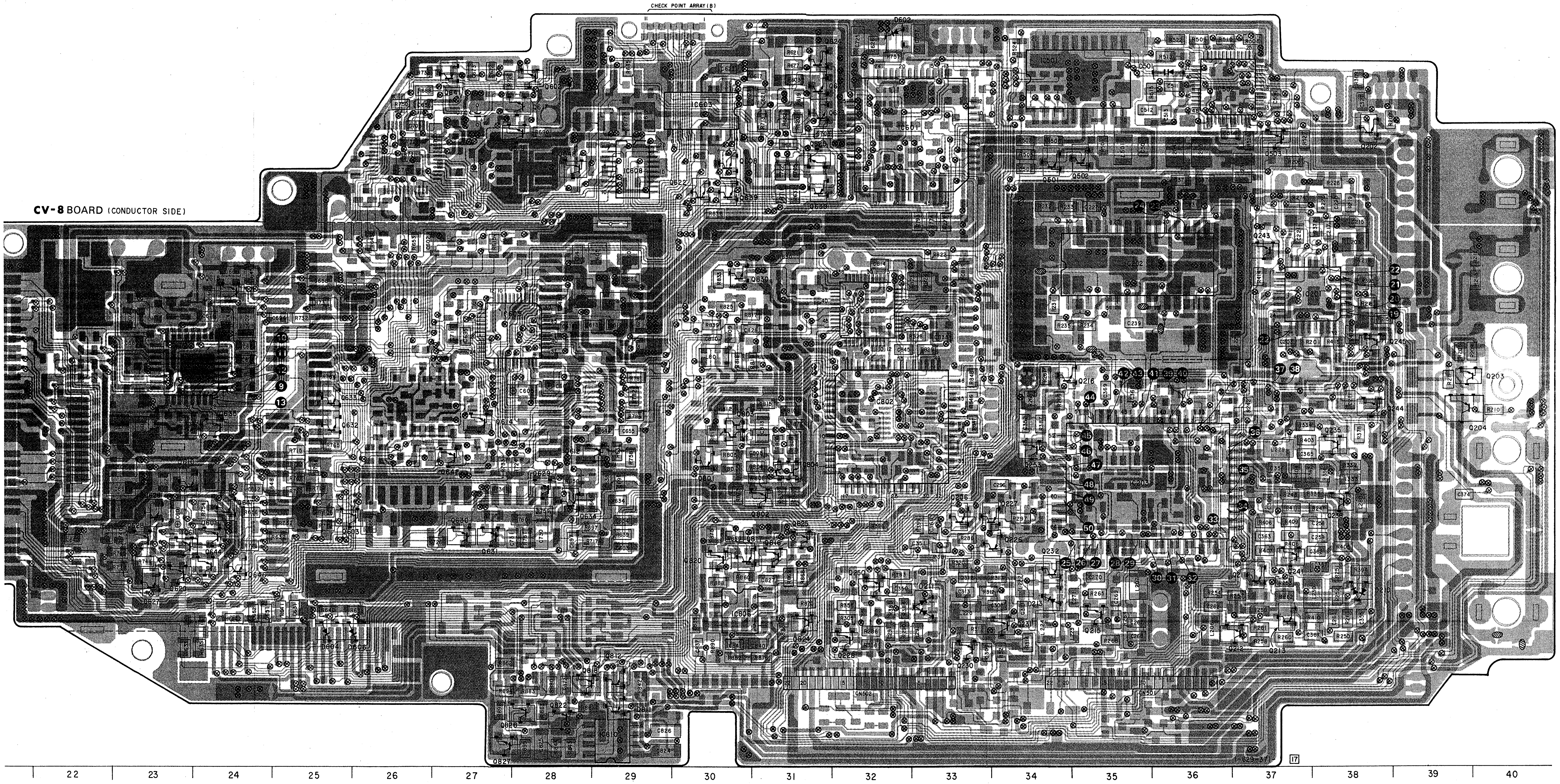
29
30
31
32
33
34

CV-8 BOARD (CONDUCTOR SIDE)



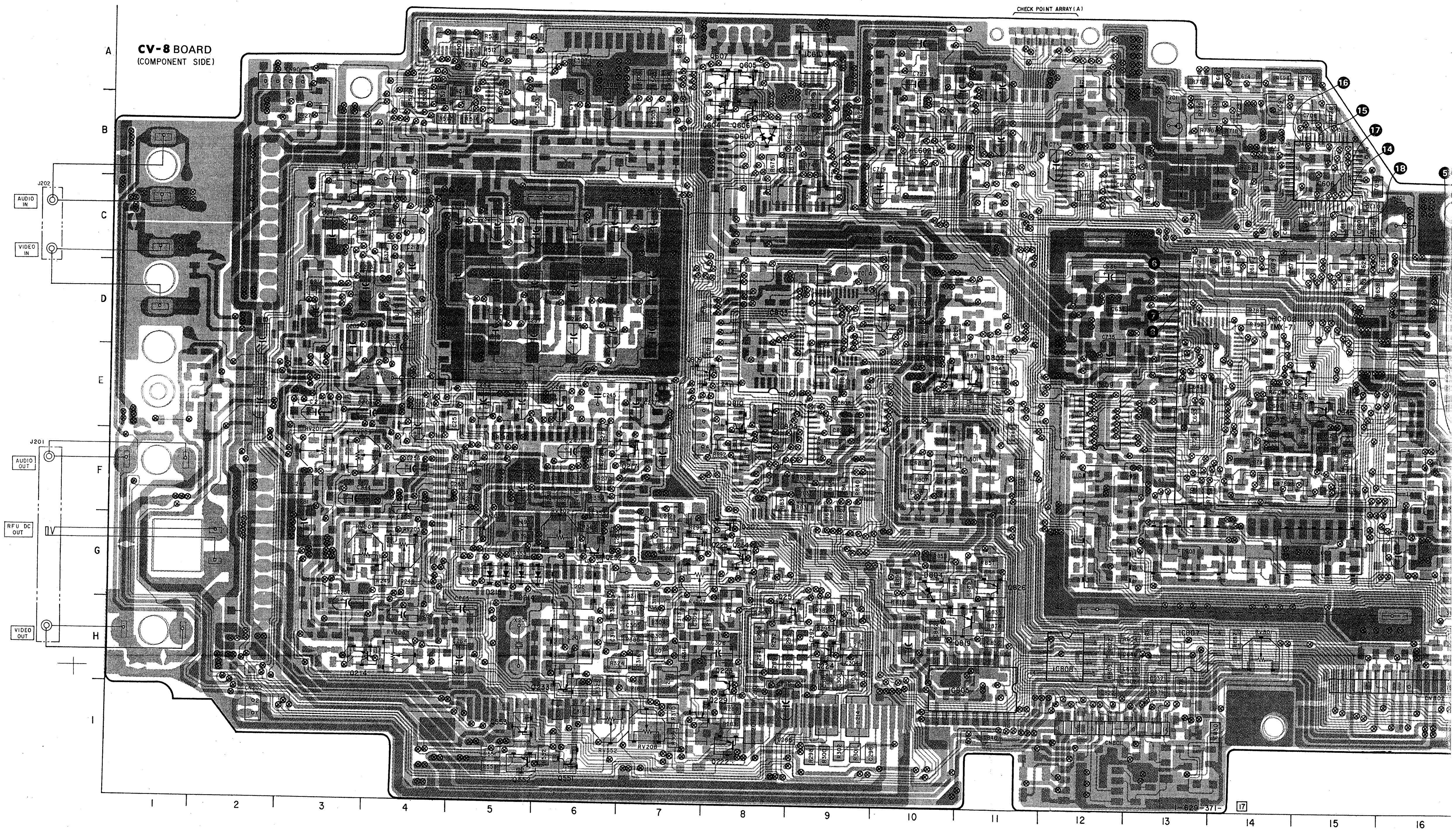
CHECK POINT ARRAY (B)
Q203
Q204
R210
C374
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40

CV-8 (CAMERA, VIDEO PROCESS) PRINTED WIRING BOARDS

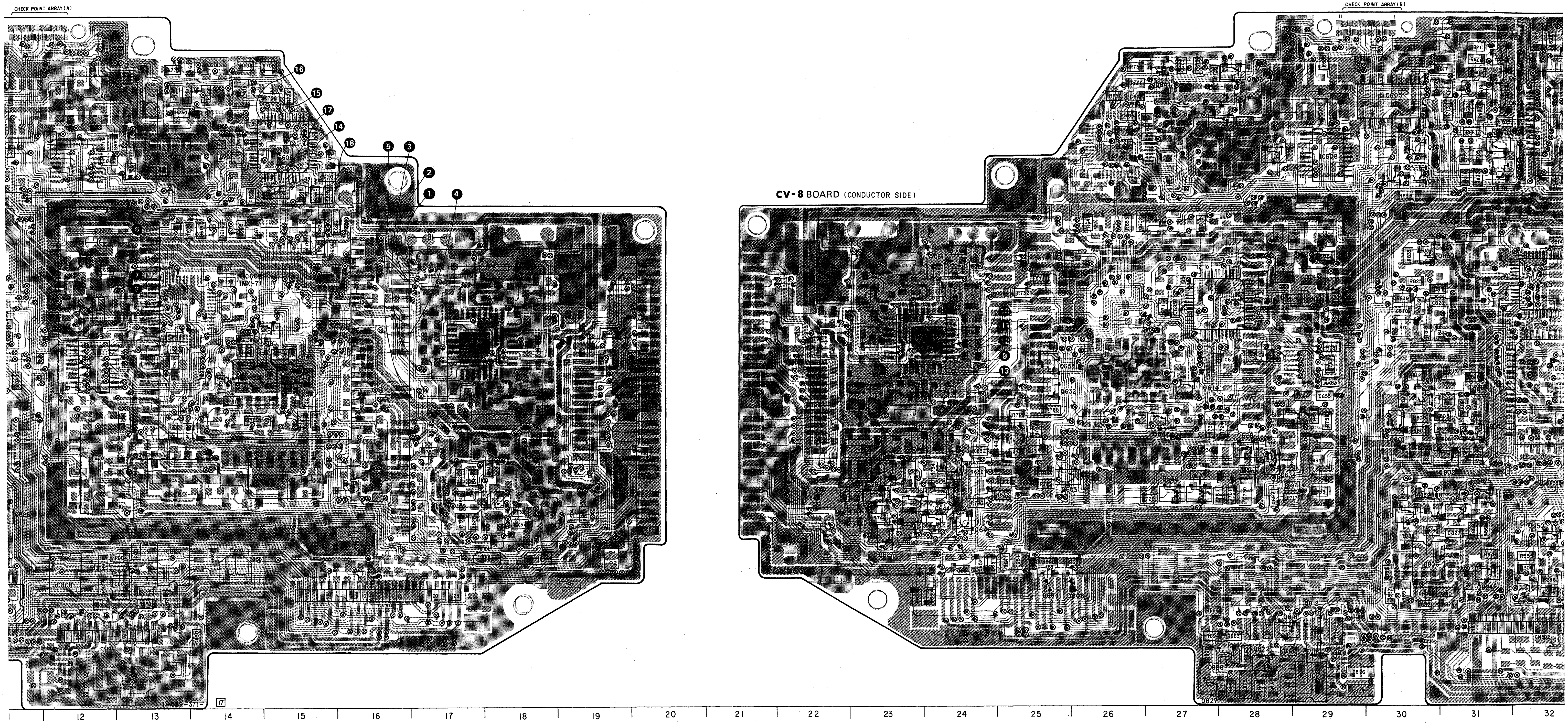
— Ref. No. CV-8 BOARD: 2000 series —

CV-8 BOARD

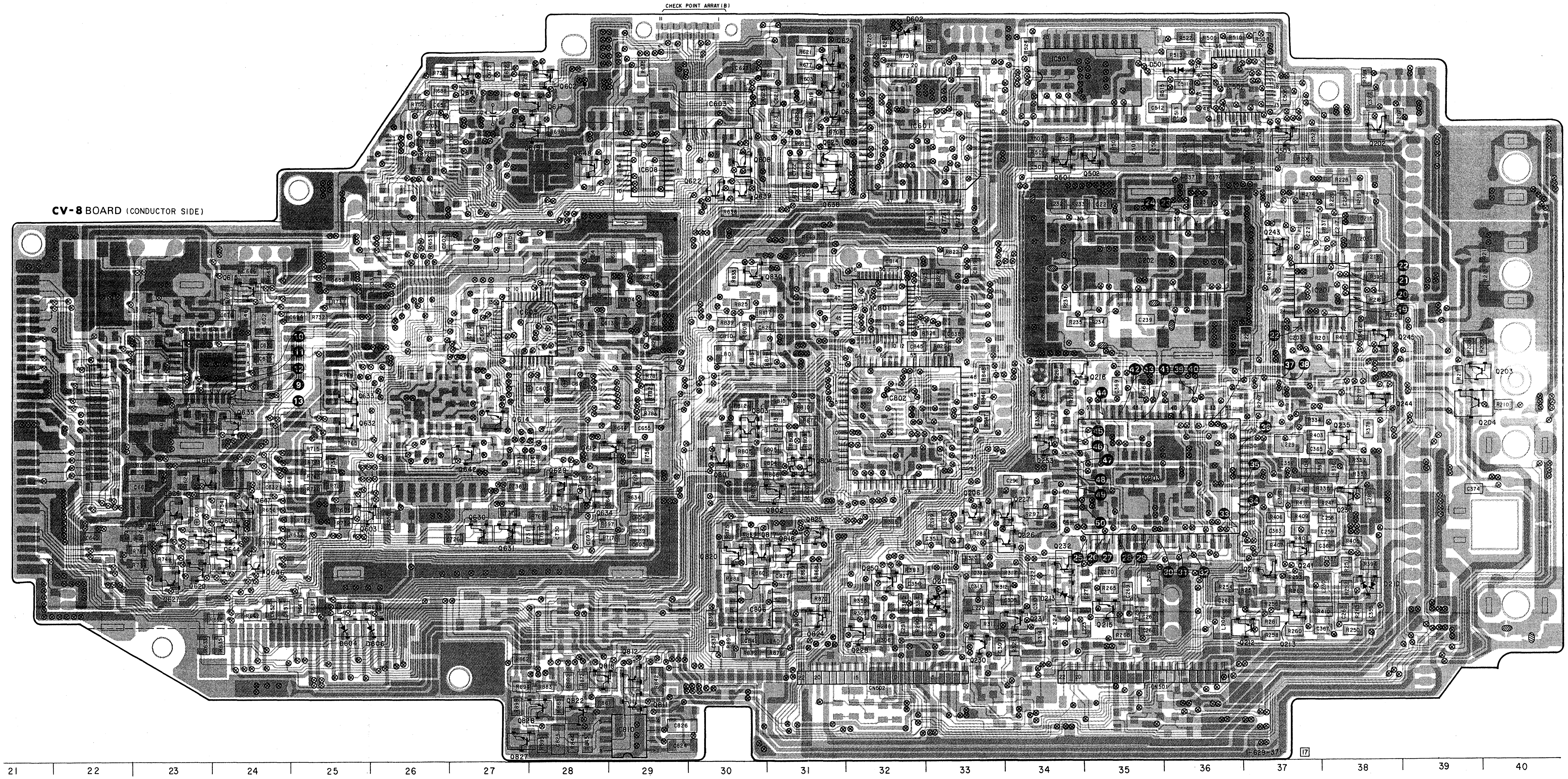
D210	H-38
D211	H-33
D213	H-34
D214	G-5
D215	G-5
D501	A-36
D601	B-8
D602	A-32
D604	H-25
D606	H-26
D804	G-10
IC201	D-38
IC202	D-35
IC203	F-35
IC501	A-34
IC502	A-36
IC601	B-32
IC602	B-10
IC603	B-30
IC604	E-23
IC605	D-27
IC606	B-15
IC608	B-29
IC609	E-12
IC610	A-9
IC801	D-32
IC802	E-32
IC803	D-8
IC804	E-8
IC805	H-11
IC806	H-30
IC807	H-13
IC808	H-12
IC810	I-29
Q202	B-38
Q203	E-40
Q204	E-39
Q206	G-33
Q207	G-8
Q210	C-3
Q211	G-37
Q212	H-37
Q213	H-37
Q214	H-3
Q215	H-35
Q216	E-35
Q217	F-7
Q222	I-8
Q223	H-8
Q224	H-9
Q225	G-8
Q226	G-34
Q227	G-34
Q228	H-32
Q229	I-8
Q230	H-33
Q231	H-34
Q232	G-34
Q233	I-6
Q235	F-38
Q236	G-38
Q241	G-37
Q243	C-37
Q244	E-38
Q245	E-38
Q250	H-32
Q251	H-9
Q252	G-6
Q253	F-34
Q254	G-8
Q501	B-34
Q502	B-35
Q503	B-37
Q551	I-6
Q552	I-5
Q553	I-5
Q602	A-28
Q603	G-25
Q604	B-8
Q605	A-8
Q606	B-8
Q607	A-8
Q608	B-30
Q609	G-24
Q610	F-23
Q611	G-23
Q612	F-28
Q614	F-27
Q615	D-24
Q617	B-28
Q618	E-15
Q619	B-28
Q620	H-23
Q621	A-31
Q622	C-30
Q623	B-31
Q624	A-31
Q625	B-31
Q626	G-23
Q627	H-23
Q628	G-23
Q629	F-28
Q630	G-27
Q631	G-27
Q632	F-25
Q633	E-25
Q634	G-28
Q635	F-24
Q638	C-31
Q639	C-30
Q641	A-27
Q642	F-27
Q644	G-24
Q645	E-15
Q646	G-24
Q647	G-24
Q648	B-28
Q801	F-30
Q802	G-31
Q803	F-30
Q804	F-31
Q806	E-10
Q807	E-11
Q809	E-7
Q810	E-8
Q811	I-29
Q812	I-29
Q816	G-31
Q817	G-31
Q818	I-28
Q819	H-12
Q820	G-30
Q822	I-28
Q824	H-31
Q825	G-31
Q826	G-11
Q827	I-27
Q828	I-28
Q830	D-30



CV-8 BOARD (CONDUCTOR SIDE)


CHECK POINT ARRAY (A)
CHECK POINT ARRAY (B)
IC808
IC608
IC603
IC806
CN802
CN502
1-629-371-
17
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32

CV-8 BOARD (CONDUCTOR SIDE)


CHECK POINT ARRAY (B)
IC603
IC608
IC601
IC602
IC802
IC501
IC201
IC806
IC810
CN502
CN501
21
22
23
24
25
26
27
28
29
30
31
32
33
34
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39
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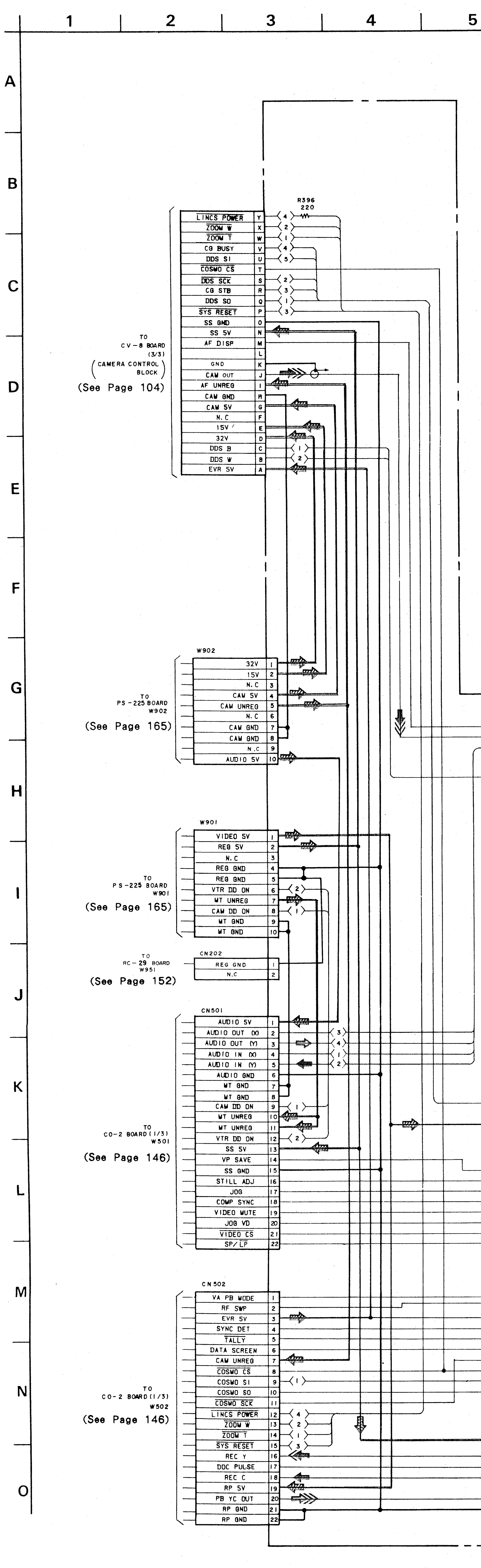
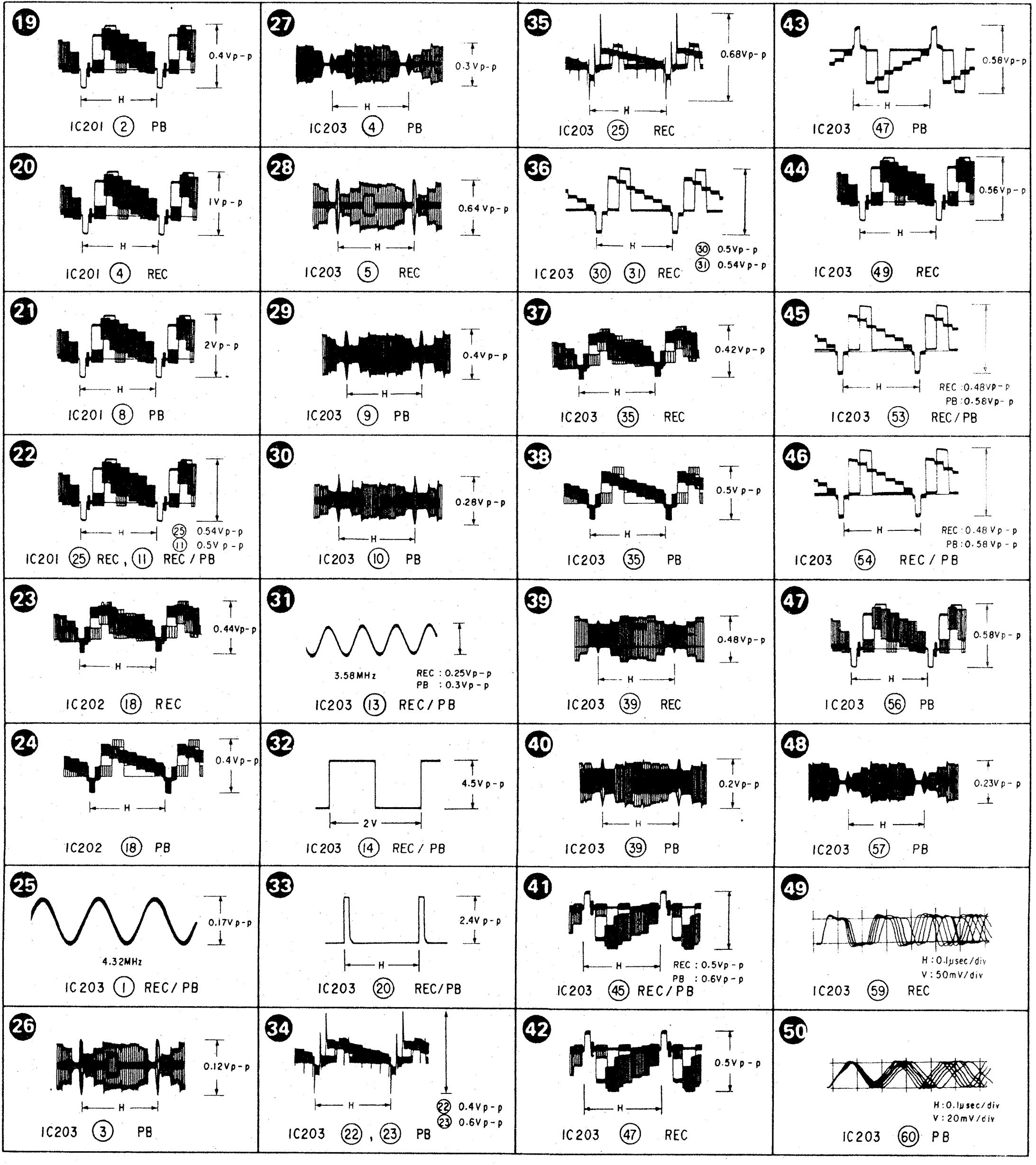
VIDEO VIDEO

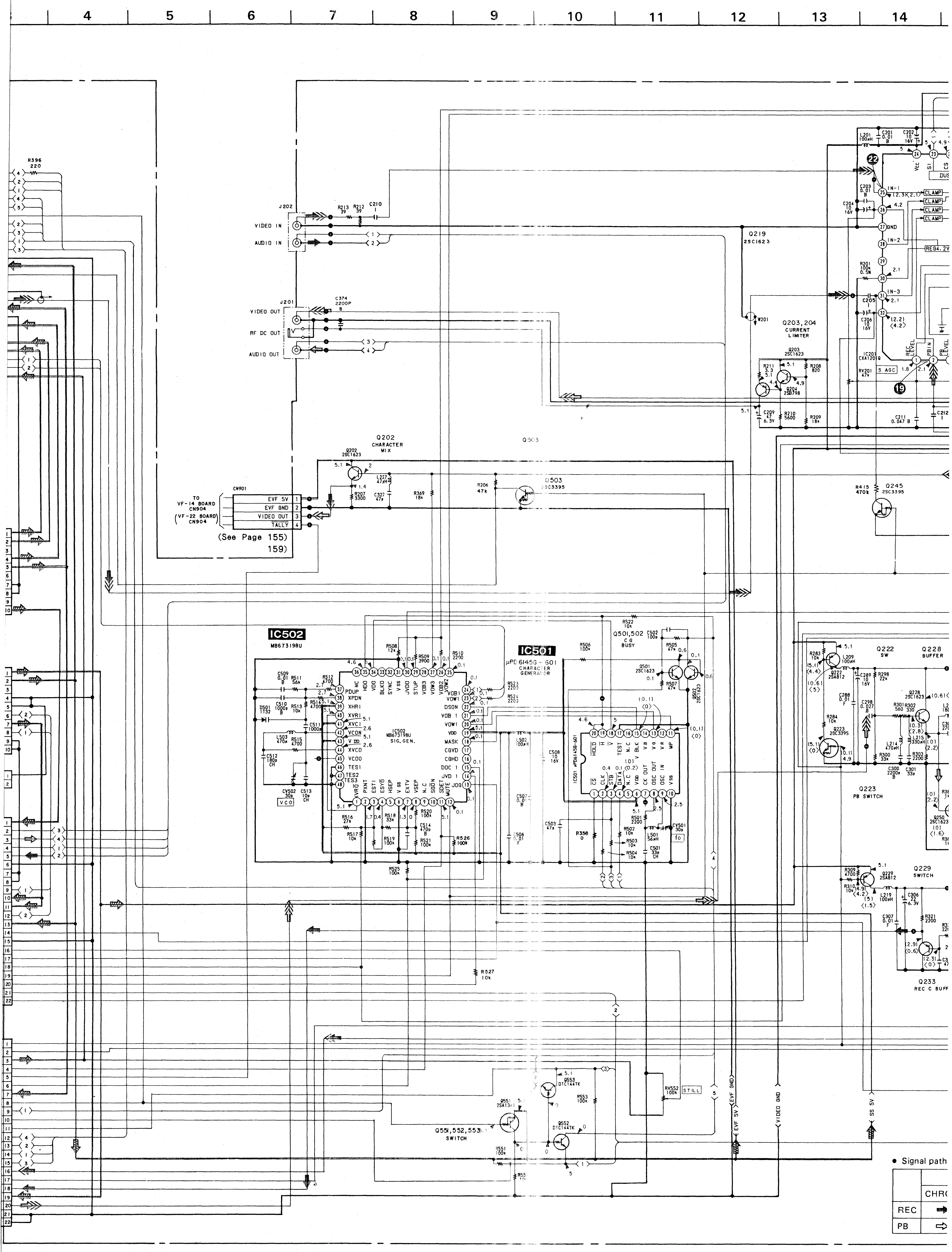
CV-8 (VIDEO PROCESS) SCHEMATIC DIAGRAMS

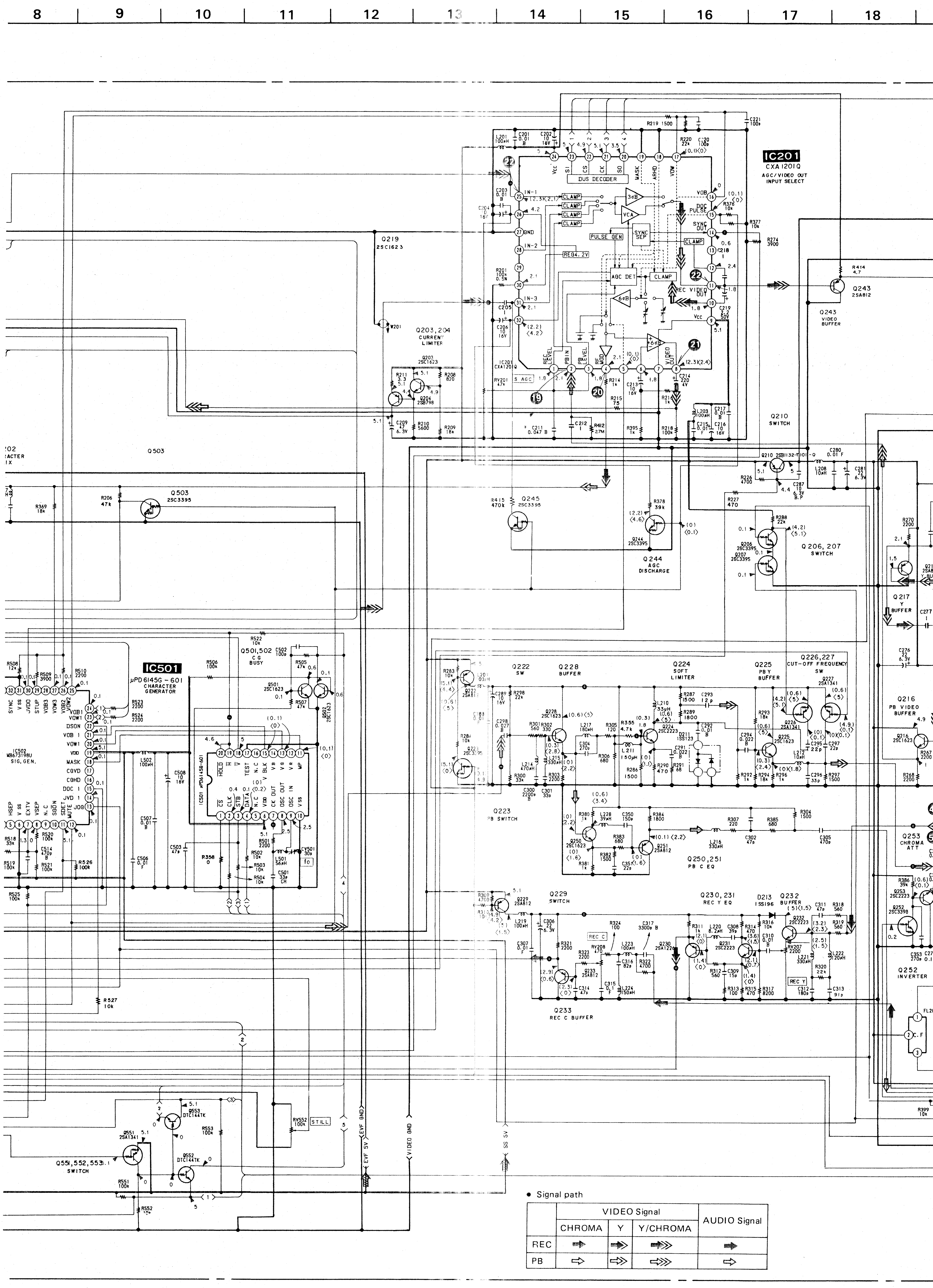
— Ref. No. CV-8 BOARD: 2000 series —


1
2
3
4
5
A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
R396
220
LINCS POWER Y 4
ZOOM W X 2
ZOOM T W 1
CG BUSY V 4
DDS SI U 5
COSMO CS T
DDS SCK S 2
CG STB R 3
DDS SO Q 1
SYS RESET P 3
SS GND O
SS 5V N
AF DISP M
L
GND K
CAM OUT J
AF UNREG I
CAM GND H
CAM 5V G
N.C F
15V E
32V D
DDS B C 1
DDS W B 2
EVR 5V A
TO
CV-8 BOARD
(3/3)
(CAMERA CONTROL BLOCK)
(See Page 104)
W902
32V 1
15V 2
N.C 3
CAM 5V 4
CAM UNREG 5
N.C 6
CAM GND 7
CAM GND 8
N.C 9
AUDIO 5V 10
TO
PS-225 BOARD
W902
(See Page 165)
W901
VIDEO 5V 1
REG 5V 2
N.C 3
REG GND 4
REG GND 5
VTR DD ON 6 2
MT UNREG 7
CAM DD ON 8 1
MT GND 9
MT GND 10
TO
PS-225 BOARD
W901
(See Page 165)
CN202
REG GND 1
N.C 2
TO
RC-29 BOARD
W951
(See Page 152)
CN501
AUDIO 5V 1
AUDIO OUT (X) 2 3
AUDIO OUT (Y) 3 4
AUDIO IN (X) 4 1
AUDIO IN (Y) 5 2
AUDIO GND 6
MT GND 7
MT GND 8
CAM DD ON 9 1
MT UNREG 10
MT UNREG 11
VTR DD ON 12 2
SS 5V 13
VP SAVE 14
SS GND 15
STILL ADJ 16
JOG 17
COMP SYNC 18
VIDEO MUTE 19
JOG VD 20
VIDEO CS 21
SP/LP 22
TO
CO-2 BOARD (1/3)
W501
(See Page 146)
CN502
VA PB MODE 1
RF SWP 2
EVR 5V 3
SYNC DET 4
TALLY 5
DATA SCREEN 6
CAM UNREG 7
COSMO CS 8
COSMO SI 9 1
COSMO SO 10
COSMO SCK 11
LINCS POWER 12 4
ZOOM W 13 2
ZOOM T 14 1
SYS RESET 15 3
REC Y 16
DOC PULSE 17
REC C 18
RP 5V 19
PB YC OUT 20
RP GND 21
RP GND 22
TO
CO-2 BOARD (1/3)
W502
(See Page 146)

CV-8 BOARD (VIDEO)

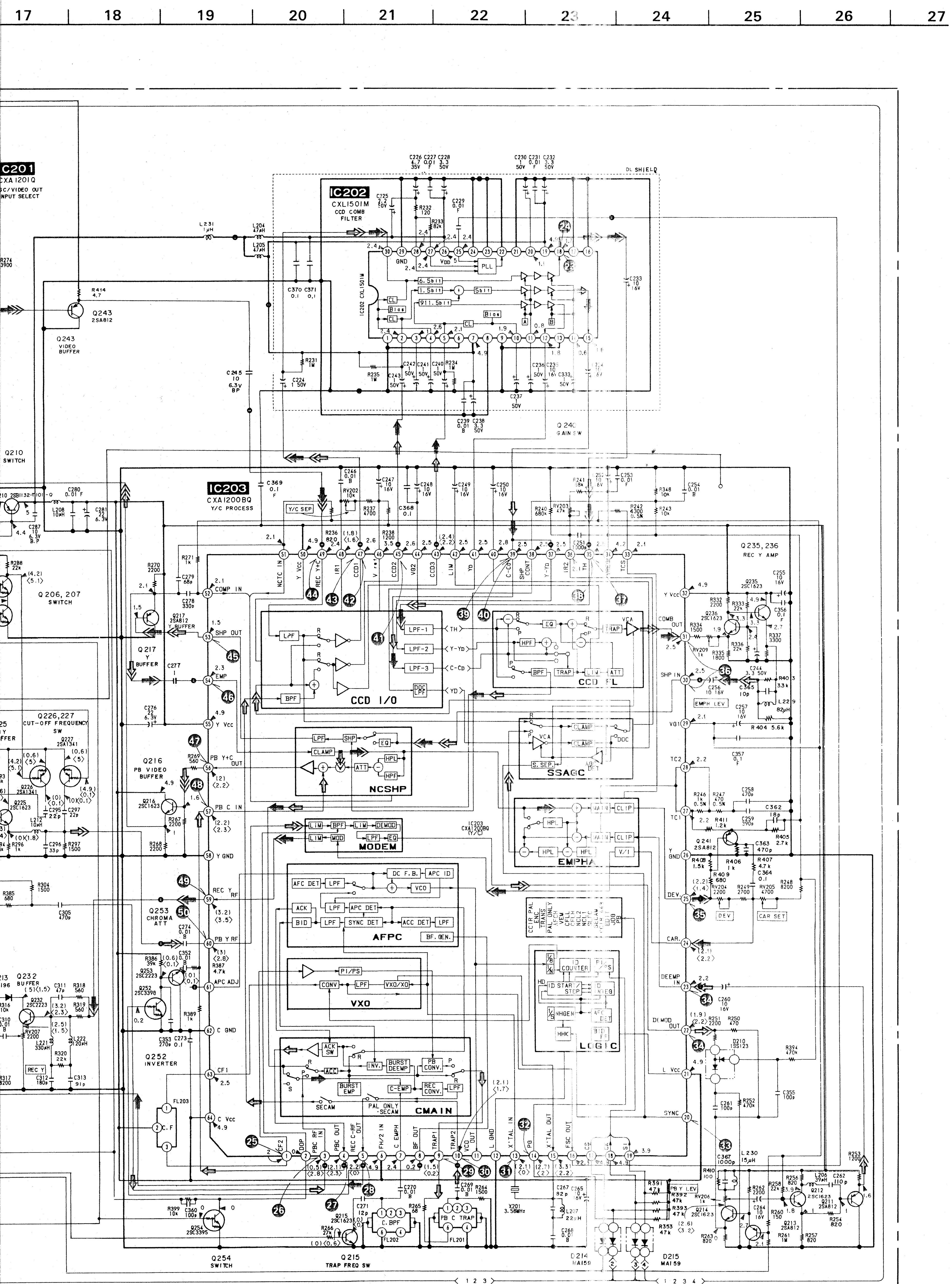



4
5
6
7
8
9
10
11
12
13
14
J202
VIDEO IN
AUDIO IN
J201
VIDEO OUT
RF DC OUT
AUDIO OUT
Q202
CHARACTER MIX
CN901
TO VF-14 BOARD CN904
(VF-22 BOARD CN904)
EVF 5V
EVF GND
VIDEO OUT
TALLY
(See Page 155) 159)
Q503
2SC3395
Q219
2SC1623
Q203,204
CURRENT LIMITER
IC201
CXA1201Q
Q245
2SC3395
IC502
MB673198U
IC502 MB673198U SIG. GEN.
IC501
μPD 6145G-601
CHARACTER GENERATOR
Q501,502
C G BUSY
Q222
SW
Q228
BUFFER
Q223
PB SWITCH
Q229
SWITCH
Q233
REC C BUFF
Q551,552,553
SWITCH
RV552
STILL
EVF 5V
EVF GND
VIDEO GND
SS 5V
• Signal path
CHR
REC
PB


8
9
10
11
12
13
14
15
16
17
18
IC201
CXA1201Q
AGC/VIDEO OUT INPUT SELECT
DUS DECODER
CLAMP
VCA
3dB
PULSE GEN
SYNC SEP
REG4.2V
AGC DET
REC VIDEO OUT
6dB
S AGC
Q219 2SC1623
Q203,204 CURRENT LIMITER
Q243 VIDEO BUFFER
Q210 SWITCH
Q503 2SC3395
Q245 2SC3395
Q244 AGC DISCHARGE
Q206,207 SWITCH
Q217 Y BUFFER
IC501
µPD6145G-601
CHARACTER GENERATOR
IC502 MB673198U SIG. GEN.
Q501,502 C G BUSY
Q222 SW
Q228 BUFFER
Q224 SOFT LIMITER
Q225 PB Y BUFFER
Q226,227 CUT-OFF FREQUENCY SW
Q216 PB VIDEO BUFFER
Q223 PB SWITCH
Q250,251 PB C EQ
Q253 CHROMA ATT
Q229 SWITCH
Q230,231 REC Y EQ
D213 1SS196
Q232 BUFFER
Q233 REC C BUFFER
Q252 INVERTER
REC C
REC Y
STILL
Q551,552,553 SWITCH
EVF GND
EVF SV
VIDEO GND
SS SV

- Signal path

	VIDEO Signal			AUDIO Signal
	CHROMA	Y	Y/CHROMA	
REC	➡	➡》	➡》》	➡
PB	⇨	⇨》	⇨》》	⇨


17
18
19
20
21
22
23
24
25
26
27
IC201
CXA1201Q
SC/VIDEO OUT INPUT SELECT
IC202
CXL1501M
CCD COMB FILTER
DL SHIELD
PLL
6.5bit
1.5bit
5bit
911.5bit
CL
Bias
Q243 2SA812
Q243 VIDEO BUFFER
Q240 GAIN SW
Q210 SWITCH
IC203
CXA1200BQ
Y/C PROCESS
Y/C SEP
Q235, 236 REC Y AMP
Q206, 207 SWITCH
Q217 Y BUFFER
Q226, 227 CUT-OFF FREQUENCY SW
Q216 PB VIDEO BUFFER
Q253 CHROMA ATT
Q232 BUFFER
Q252 INVERTER
Q254 SWITCH
Q215 TRAP FREQ SW
Q213, 214 HALF H SHIFT CANCEL
Q211, 212 PB Y EQ
Q241 2SA812
CCD I/O
CCD FL
NCSHP
SSAGC
EMPHA
MODEM
AFPC
VXO
CMAIN
LOGIC
LPF-1
LPF-2
LPF-3
DOC LPF
COMP IN
SHP OUT
EMP
Y Vcc
PB Y+C OUT
PB C IN
Y GND
REC Y RF
PB Y RF
APC ADJ
C GND
CF1
C Vcc
COMB OUT
SHP IN
VG1
TC2
TC1
Y GND
DEV
CAR
DEEMP IN
DEMOD OUT
L Vcc
SYNC
FL203
C.F
C.BPF
FL202
PB C TRAP
FL201
X201 3.58MHz
D214 MA159
D215 MA159
D210 1SS123
DEV
CAR SET
EMPH LEV
PB Y LEV

no mark: REC/PB mode
( ): REC mode
〈 〉: PB mode

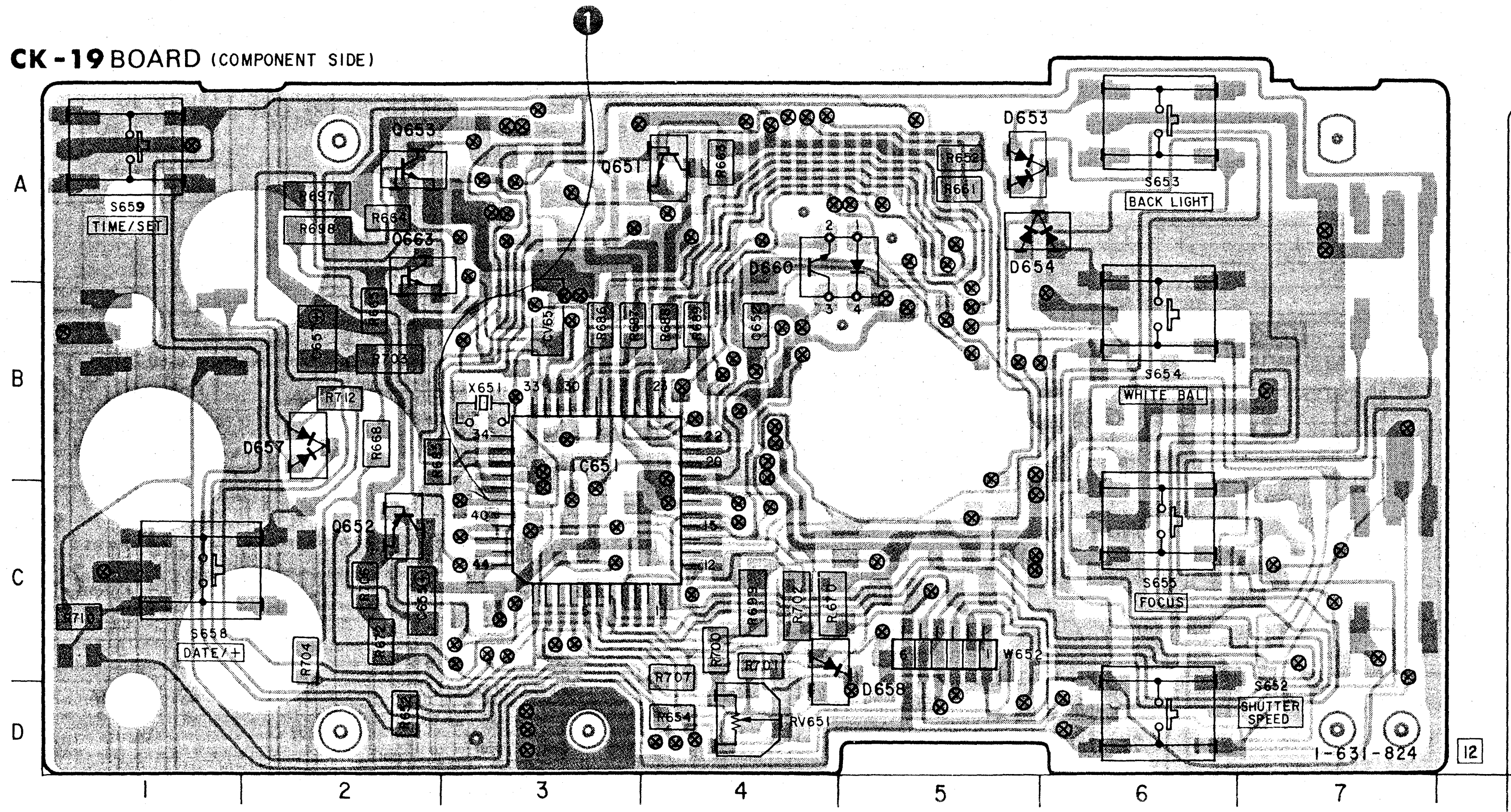
CV-8 BOARD (1/3) (VIDEO BLOCK)

I-5 (RELAY), CK-19 (TITLE CONTROL, CAMERA FUNCTION SWITCH),)K-4 (EDIT SEARCH SWITCH) PRINTED WIRING BOARDS

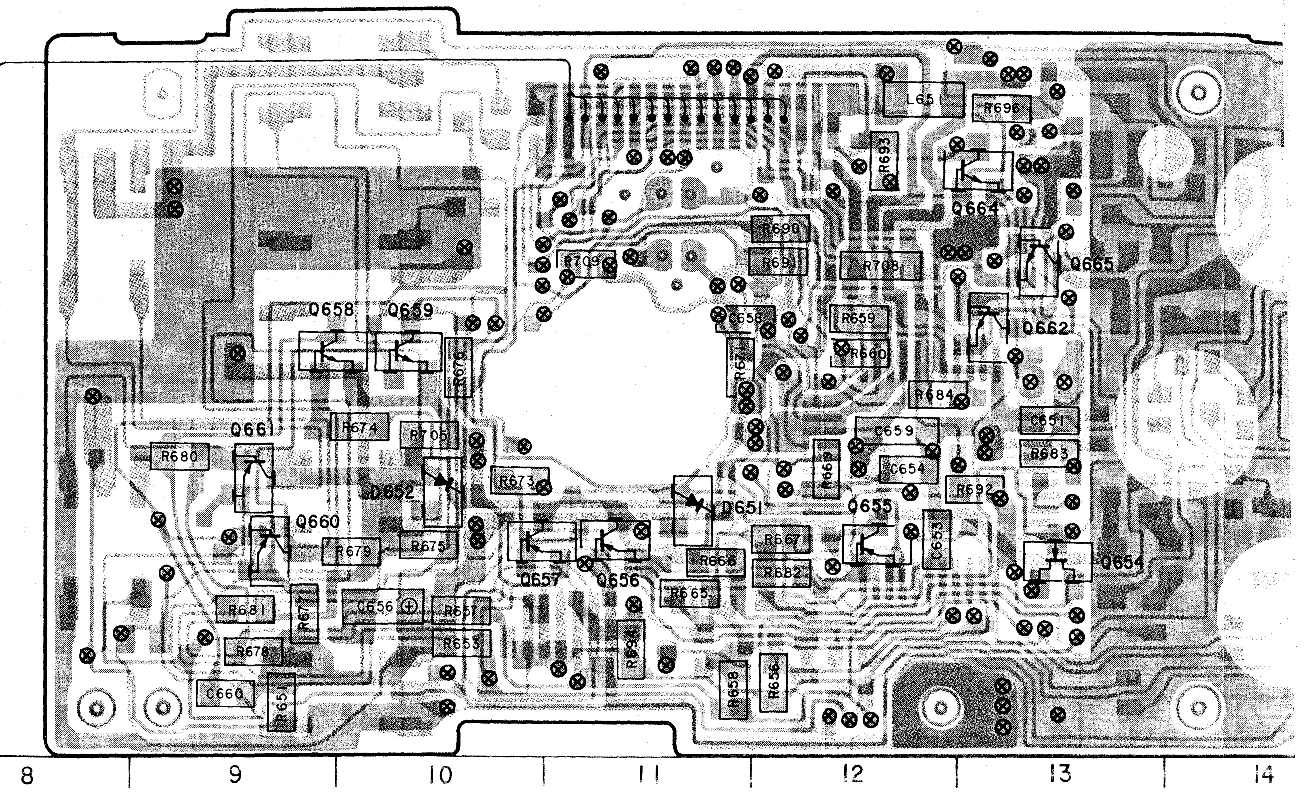
– Ref. No. LI-5 BOARD: 3000 series, CK-19 BOARD: 4000 series, DK-4 BOARD: 5000 series —

CK-19 BOARD	
D651	C-11
D652	C-10
D653	A-5
D654	A-5
D657	B-2
D658	C-4
D660	A-4
IC651	C-3
Q651	A-4
Q652	C-2
Q653	A-2
Q654	C-13
Q655	C-12
Q656	C-11
Q657	C-11
Q658	B-10
Q659	B-10
Q660	C-9
Q661	C-9
Q662	B-13
Q663	A-2
Q664	A-13
Q665	B-13

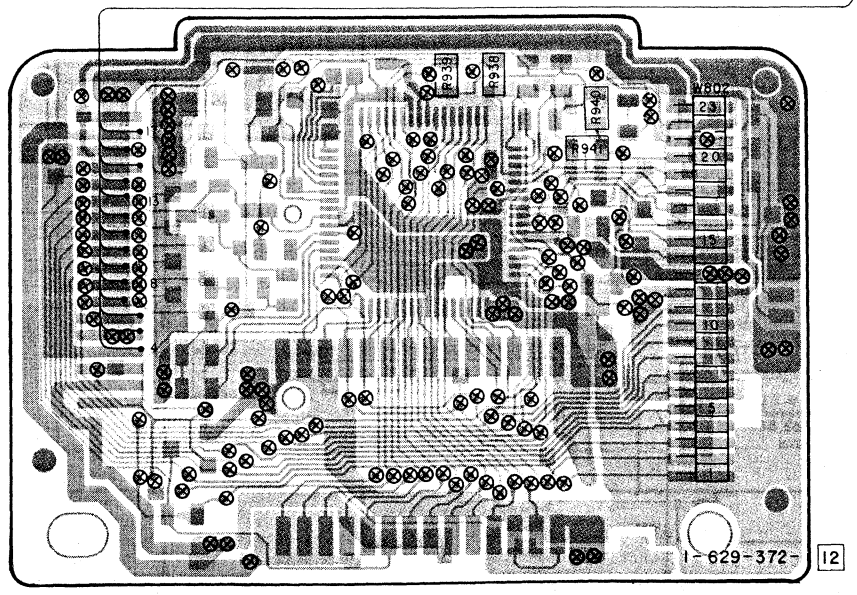
CK-19 BOARD (COMPONENT SIDE)


❶
A
B
C
D
S659
TIME/SET
Q653
R697
R698
R663
Q663
Q651
D660
D653
S653
BACK LIGHT
D654
S654
WHITE BAL
R712
D657
R668
X651
IC651
Q652
S658
DATE/+
R704
S655
FOCUS
R707
R701
RV651
D658
W652
S652
SHUTTER SPEED
1-631-824
12
1
2
3
4
5
6
7

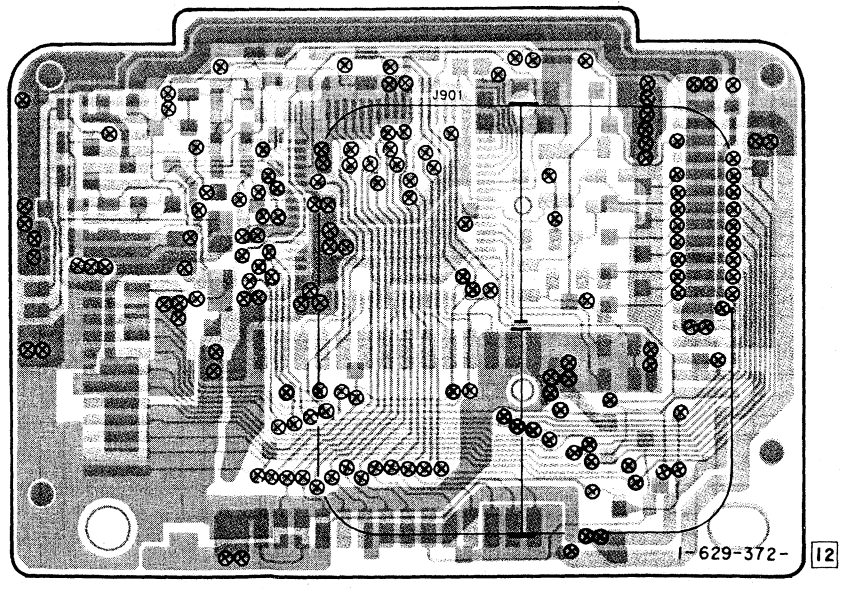
CK-19 BOARD (CONDUCTOR SIDE)


L651
R696
R693
Q664
R690
R709
R691
R708
Q665
Q658
Q659
R659
R660
Q662
R684
Q661
R674
R705
C659
C651
R680
D652
R673
D651
C654
R683
R692
Q660
Q655
R679
R675
Q657
Q656
R667
R682
C653
Q654
R681
R678
C656
R657
R665
R660
R655
C660
R658
R656
8
9
10
11
12
13
14

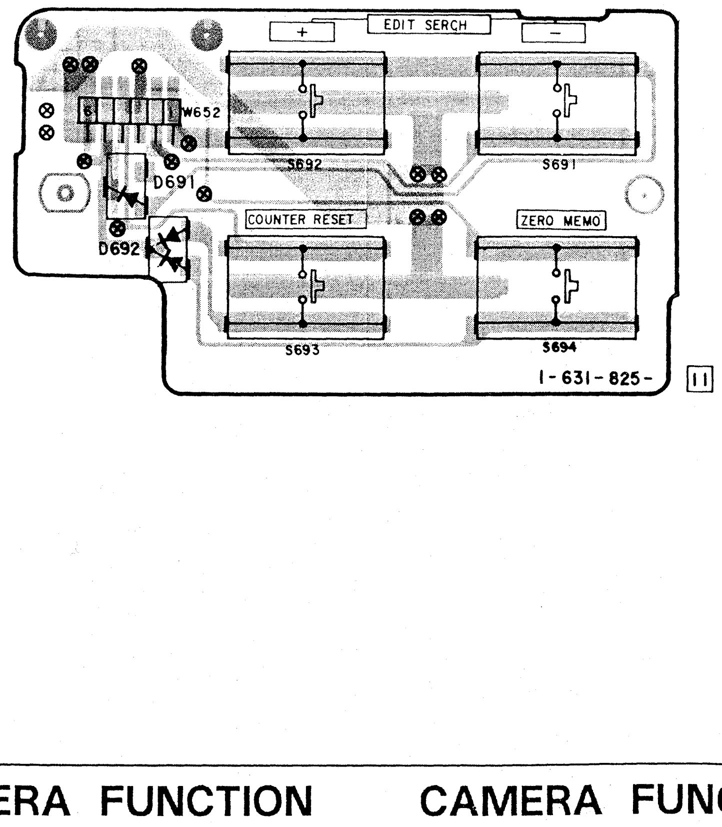
LI-5 BOARD (COMPONENT SIDE)


R939
R938
R940
R941
W802
1-629-372-
12

LI-5 BOARD (CONDUCTOR SIDE)


J901
1-629-372-
12

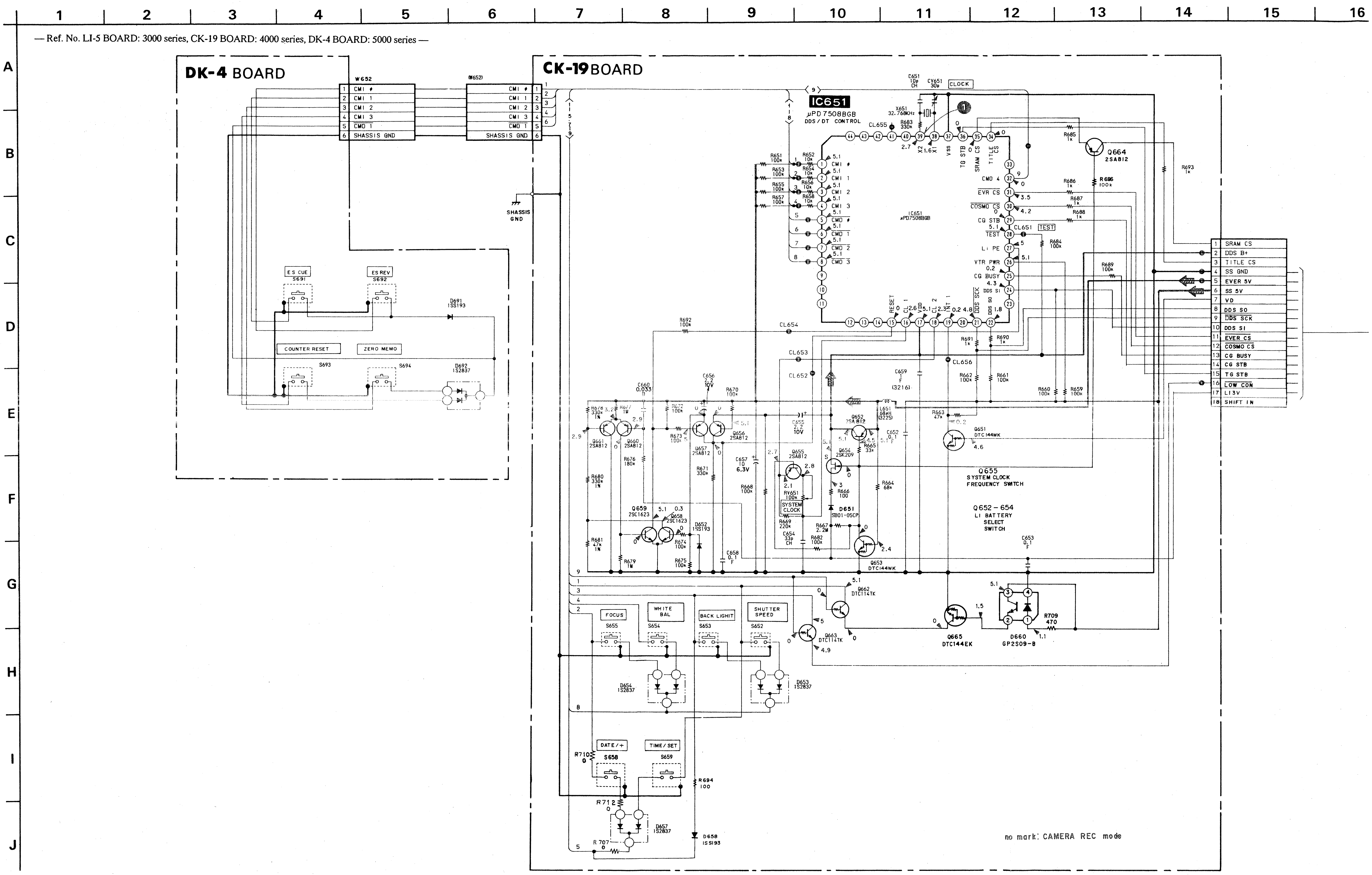
DK-4 BOARD (COMPONENT SIDE)

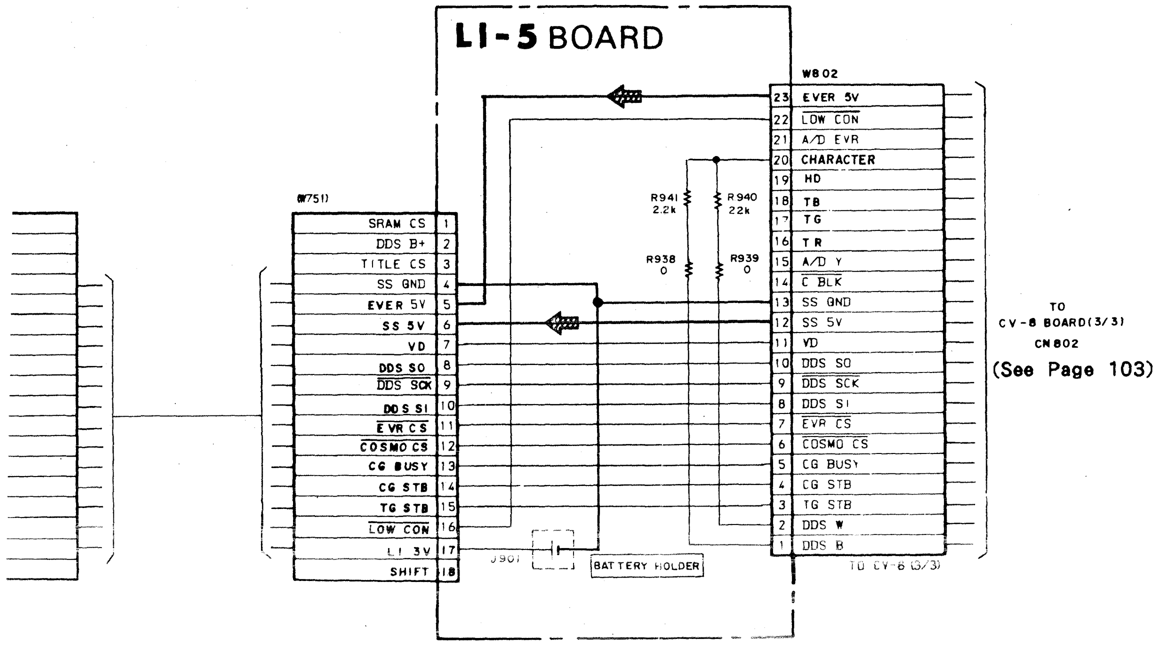

+
EDIT SERCH
−
W652
S692
S691
D691
D692
COUNTER RESET
ZERO MEMO
S693
S694
1-631-825-
11

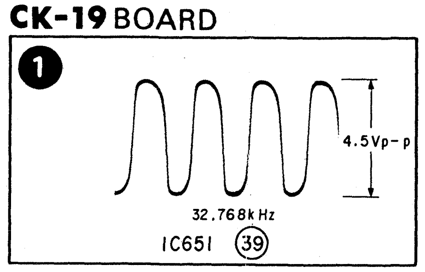
DK-

LI-5 (RELAY), CK-19 (TITLE CONTROL, CAMERA FUNCTION SWITCH), DK-4 (EDIT SEARCH SWITCH) SCHEMATIC DIAGRAMS

— Ref. No. LI-5 BOARD: 3000 series, CK-19 BOARD: 4000 series, DK-4 BOARD: 5000 series —


1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
A
B
C
D
E
F
G
H
I
J
DK-4 BOARD
W652
CMI ø
CMI 1
CMI 2
CMI 3
CMO 1
SHASSIS GND
SHASSIS GND
E S CUE
S691
ES REV
S692
D691
1SS193
COUNTER RESET
ZERO MEMO
S693
S694
D692
1S2837
CK-19 BOARD
IC651
μPD7508BGB
DDS/DT CONTROL
C651
10p
CH
CY651
30p
CLOCK
X651
32.768KHz
R683
330k
CL655
VSS
X1
X2
TG STB
SRAM CS
TITLE CS
CMD 4
EVR CS
COSMO CS
CG STB
TEST
LI PE
VTR PWR
CG BUSY
DDS SI
DDS SO
DDS SCK
RESET
CL651
TEST
Q664
2SA812
R685
1k
R686
1k
R687
1k
R688
1k
R684
100k
R689
100k
R693
1k
R651
100k
R652
10k
R653
100k
R654
10k
R655
100k
R656
10k
R657
100k
R658
10k
CMD 1
CMD 2
CMD 3
R692
100k
CL654
CL653
CL652
CL656
R691
1k
R690
1k
R662
100k
R661
100k
R660
100k
R659
100k
C659
1
F
(3216)
SHASSIS GND
C660
0.033
B
C656
2.2
10V
R670
100k
R678
330k
1N
R677
1M
R672
100k
R673
100k
Q661
2SA812
Q660
2SA812
Q657
2SA812
Q656
2SA812
C655
2.2
10V
L651
68μH
(3225)
Q652
2SA812
R665
33k
C652
0.1
F
Q654
2SK209
Q655
2SA812
R663
47k
Q651
DTC144WK
R676
180k
R671
330k
C657
10
6.3V
R668
100k
RV651
100k
SYSTEM CLOCK
R664
68k
R666
100
D651
SB01-05CP
R680
330k
1N
Q659
2SC1623
Q658
2SC1623
D652
1SS193
R669
220k
C654
33p
CH
R667
2.2M
R682
100k
R681
47k
1N
R674
100k
R675
100k
R679
1M
C658
0.1
F
Q653
DTC144WK
Q655
SYSTEM CLOCK
FREQUENCY SWITCH
Q652 – 654
LI BATTERY
SELECT
SWITCH
C653
0.1
F
Q662
DTC114TK
Q663
DTC114TK
Q665
DTC144EK
D660
GP2S09-B
R709
470
FOCUS
S655
WHITE BAL
S654
BACK LIGHT
S653
SHUTTER SPEED
S652
D654
1S2837
D653
1S2837
DATE/+
S658
TIME/SET
S659
R710
R694
100
R712
D657
1S2837
R707
D658
1SS193
1 SRAM CS
2 DDS B+
3 TITLE CS
4 SS GND
5 EVER 5V
6 SS 5V
7 VD
8 DDS SO
9 DDS SCK
10 DDS SI
11 EVER CS
12 COSMO CS
13 CG BUSY
14 CG STB
15 TG STB
16 LOW CON
17 LI3V
18 SHIFT IN
no mark: CAMERA REC mode


LI-5 BOARD
(W751)
SRAM CS 1
DDS B+ 2
TITLE CS 3
SS GND 4
EVER 5V 5
SS 5V 6
VD 7
DDS SO 8
DDS SCK 9
DDS SI 10
EVR CS 11
COSMO CS 12
CG BUSY 13
CG STB 14
TG STB 15
LOW CON 16
LI 3V 17
SHIFT 18
J901
BATTERY HOLDER
R941 2.2k
R940 22k
R938 0
R939 0
W802
23 EVER 5V
22 LOW CON
21 A/D EVR
20 CHARACTER
19 HD
18 TB
17 TG
16 TR
15 A/D Y
14 C BLK
13 SS GND
12 SS 5V
11 VD
10 DDS SO
9 DDS SCK
8 DDS SI
7 EVR CS
6 COSMO CS
5 CG BUSY
4 CG STB
3 TG STB
2 DDS W
1 DDS B
TO CV-8 (3/3)
TO
CV-8 BOARD(3/3)
CN802
(See Page 103)


CK-19 BOARD
1
4.5Vp-p
32.768kHz
IC651 (39)

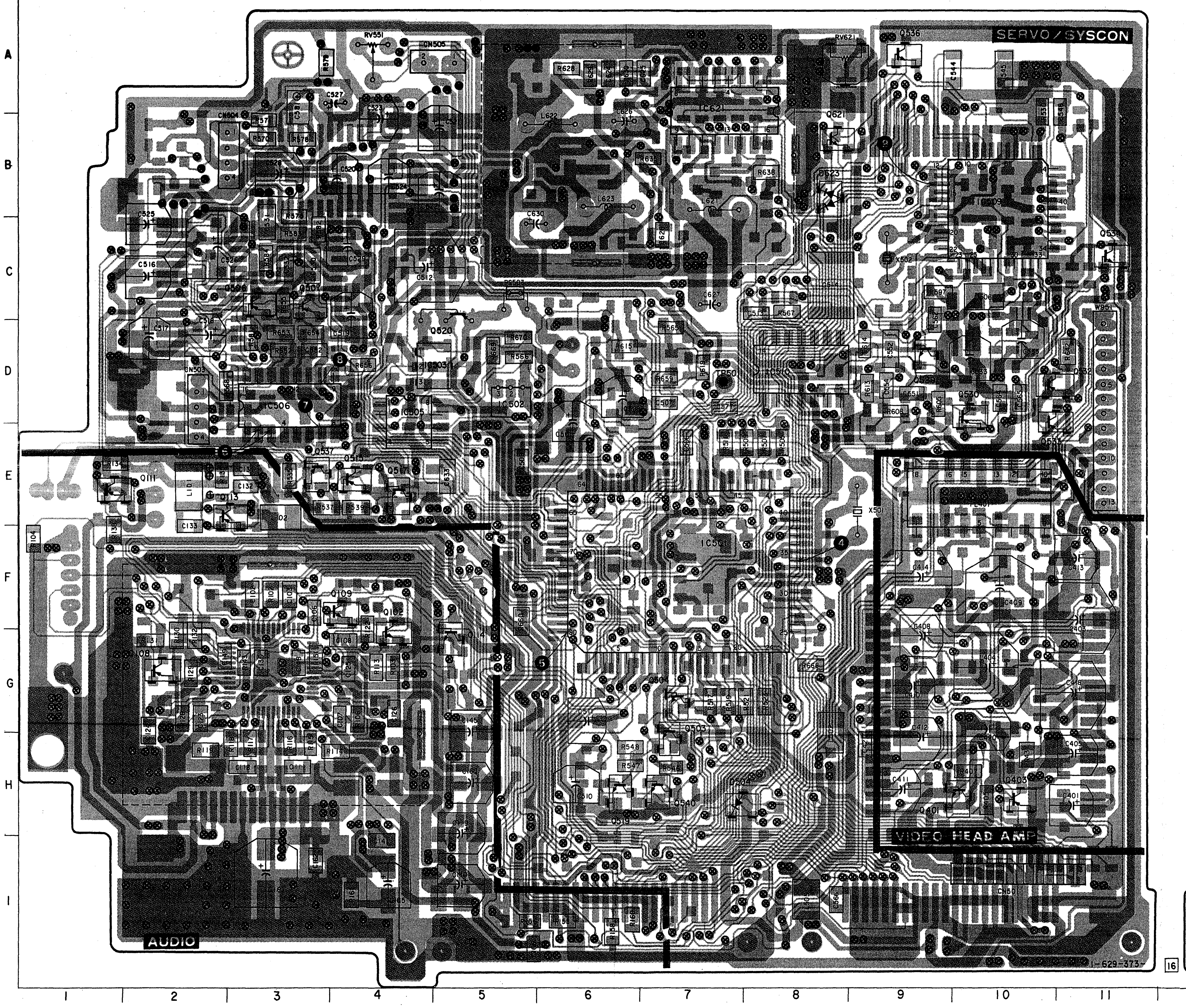
CO-2 (HEAD AMP, AUDIO/SERVO, SYSTEM CONTROL), CC-26 (TFG/SFG AMP), KS-6 (CAPSTAN MOTOR DRIVE JUNCTION), FP-89 (TAPE END SENSOR), FP-90 (TAPE TOP SENSOR) PRINTED WIRING BOARDS

— Ref. No. CO-2 BOARD: 6000 series —

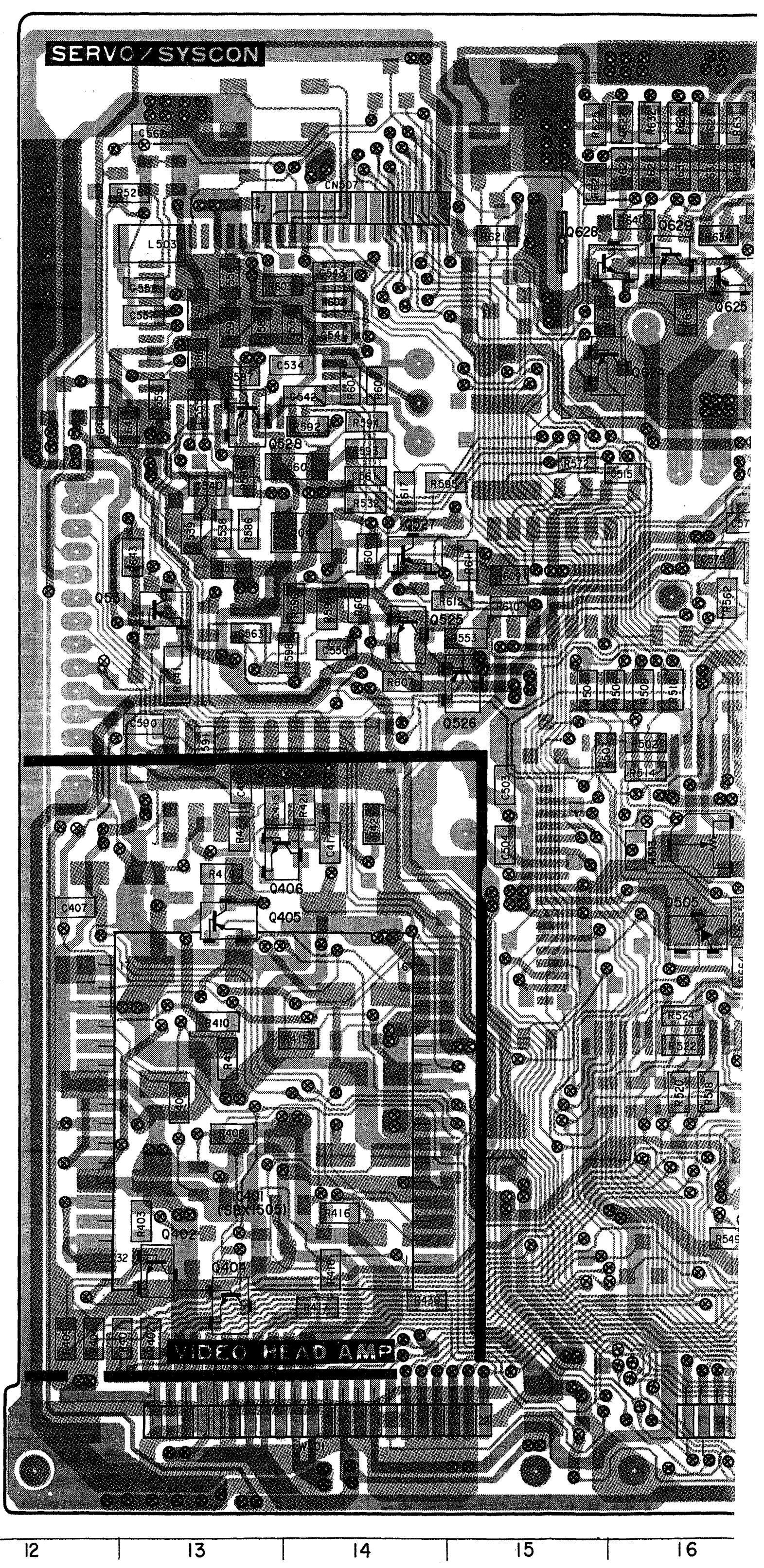
CO-2 BOARD

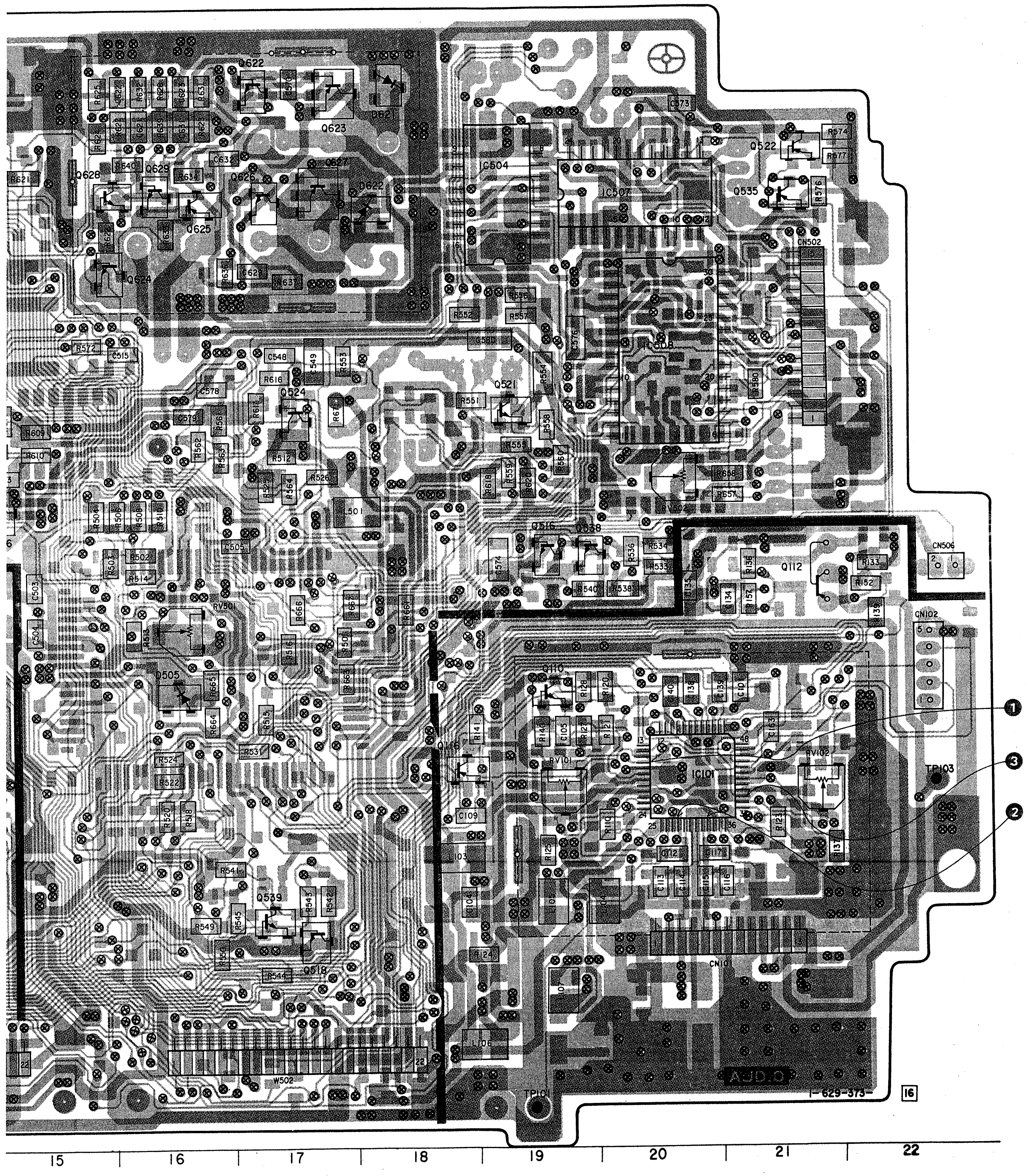
D504	H-8
D505	F-16
D621	A-18
D622	B-18
D623	B-8
IC101	G-20
IC401	G-13
IC501	F-7
IC502	D-5
IC503	D-5
IC504	B-19
IC505	D-4
IC506	D-3
IC507	B-20
IC508	C-20
IC509	B-10
IC510	D-8
IC621	A-7
Q102	F-4
Q108	G-2
Q109	F-4
Q110	F-19
Q111	E-1
Q112	E-21
Q113	E-3
Q114	G-5
Q116	G-18
Q401	H-10
Q402	H-13
Q403	H-10
Q404	H-13
Q405	F-13
Q406	F-13
Q503	H-7
Q504	G-7
Q506	C-3
Q507	C-3
Q515	E-4
Q516	E-19
Q517	E-4
Q518	H-17
Q519	H-6
Q520	D-5
Q521	D-19
Q522	B-21
Q524	D-17
Q525	D-14
Q526	E-15
Q527	D-14
Q528	C-13
Q529	D-9
Q530	D-10
Q531	D-13
Q532	D-11
Q533	E-10
Q534	C-11
Q535	B-21
Q536	A-9
Q537	E-3
Q538	E-19
Q539	H-17
Q540	H-7
Q621	B-8
Q622	A-17
Q623	A-17
Q624	C-16
Q625	B-16
Q626	B-17
Q627	B-17
Q628	B-16
Q629	B-16

CO-2 BOARD (COMPONENT SIDE)

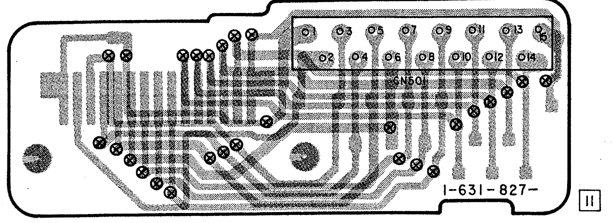

SERVO/SYSCON
AUDIO
VIDEO HEAD AMP
A
B
C
D
E
F
G
H
I
1
2
3
4
5
6
7
8
9
10
11
1-629-373-
16

CO-2 BOARD (CONDUCTOR SIDE)

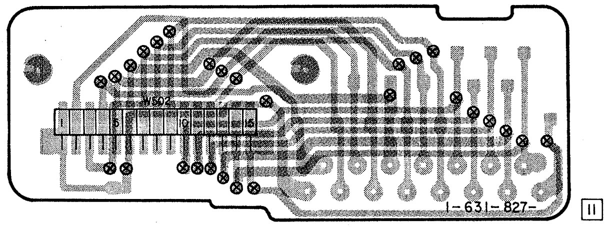

SERVO/SYSCON
VIDEO HEAD AMP
12
13
14
15
16

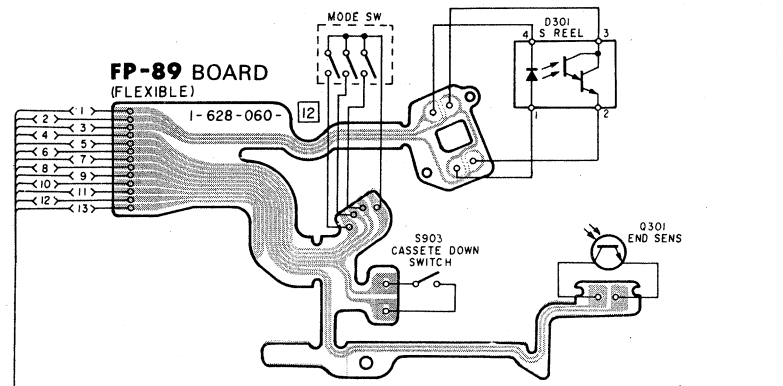

Q622
Q623
Q627
Q626
Q625
Q624
IC504
IC507
Q522
Q535
CN502
Q521
Q524
RV501
Q505
Q539
Q518
W502
Q515
Q528
Q112
CN506
CN102
Q110
Q116
RV101
RV102
IC101
TP103
CN101
TP101
AUDIO
1-629-373-
16
15
16
17
18
19
20
21
22

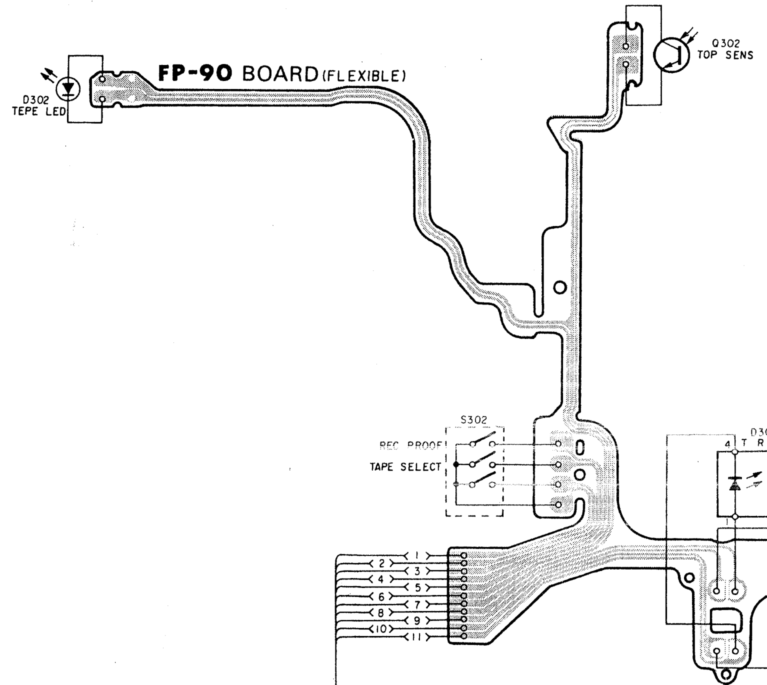
KS-6 BOARD (COMPONENT SIDE)


CN501
1-631-827-
11

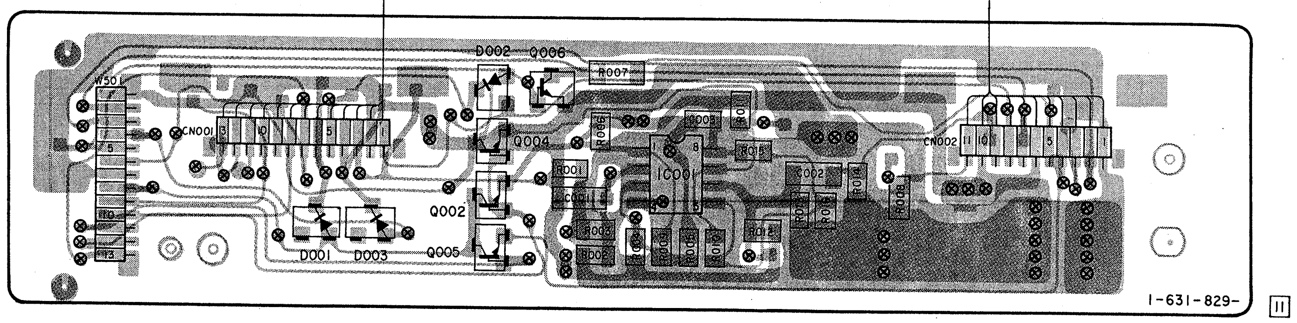
KS-6 BOARD (CONDUCTOR SIDE)



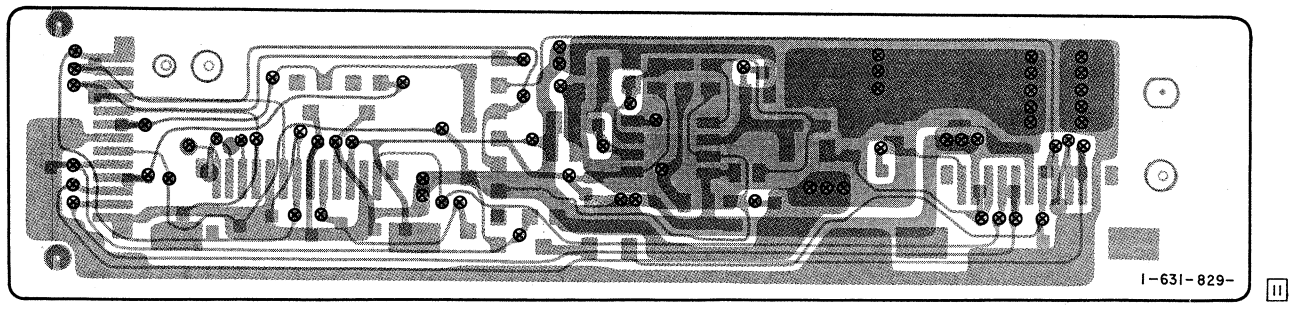

FP-89 BOARD
(FLEXIBLE)
MODE SW
D301
S REEL
1-628-060-
12
S903
CASSETE DOWN
SWITCH
Q301
END SENS


FP-90 BOARD (FLEXIBLE)
D302
TEPE LED
Q302
TOP SENS
S302
REC PROOF
TAPE SELECT
D303
T REEL
1-628-
061-
12

CC-26BOARD (COMPONENT SIDE)


W50
CN001
D002
Q006
Q004
Q002
Q005
D001
D003
IC001
CN002
1-631-829-
11

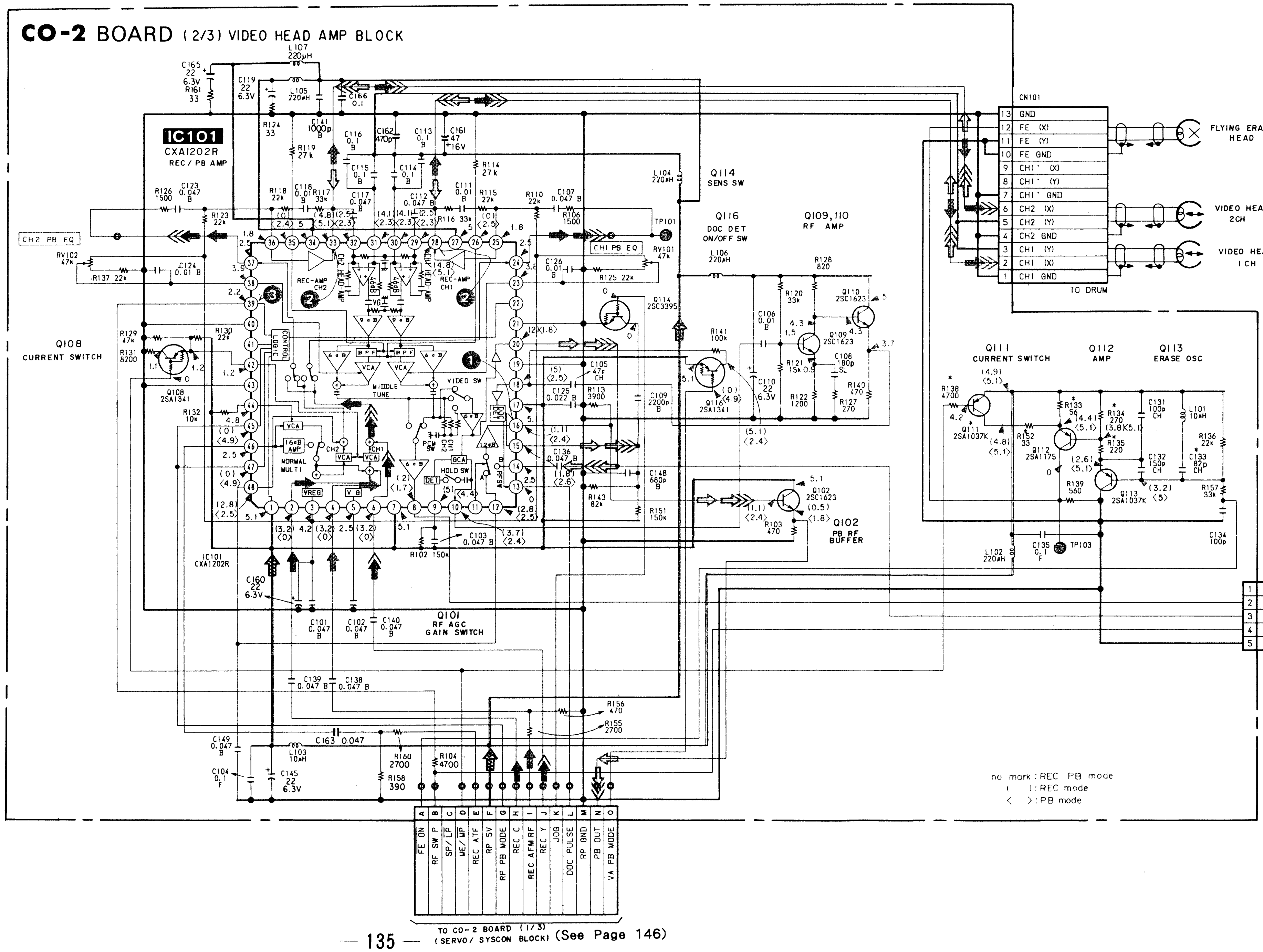
CC-26BOARD (CONDUCTOR SIDE)

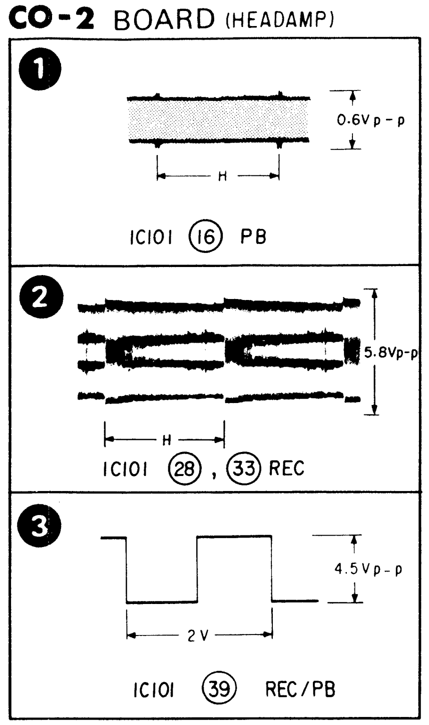


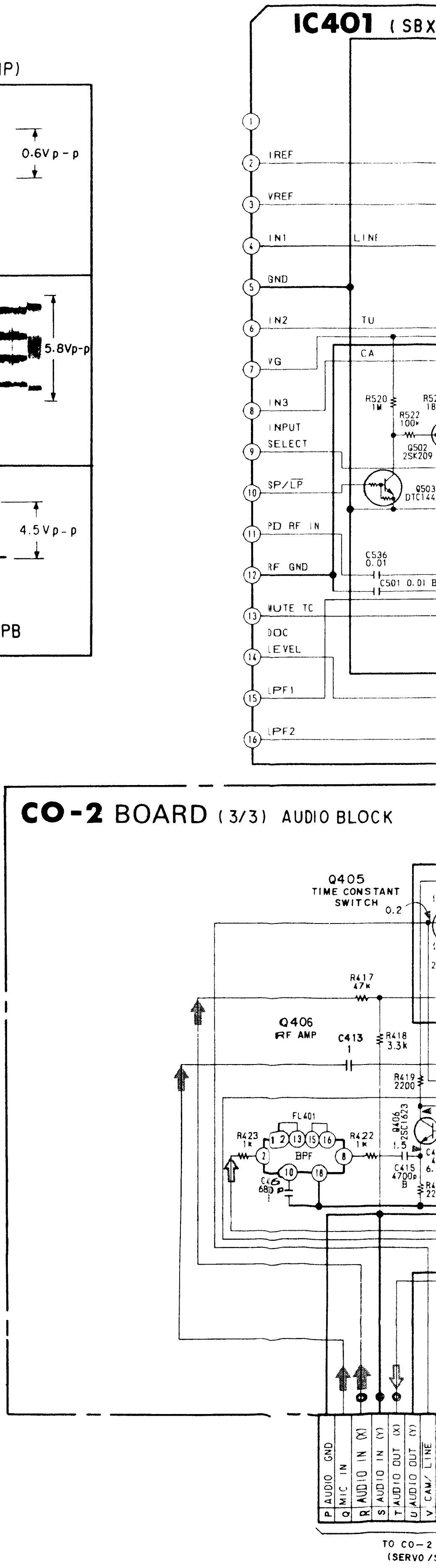
— Ref. No. CO-2 BOARD: 6000 series —

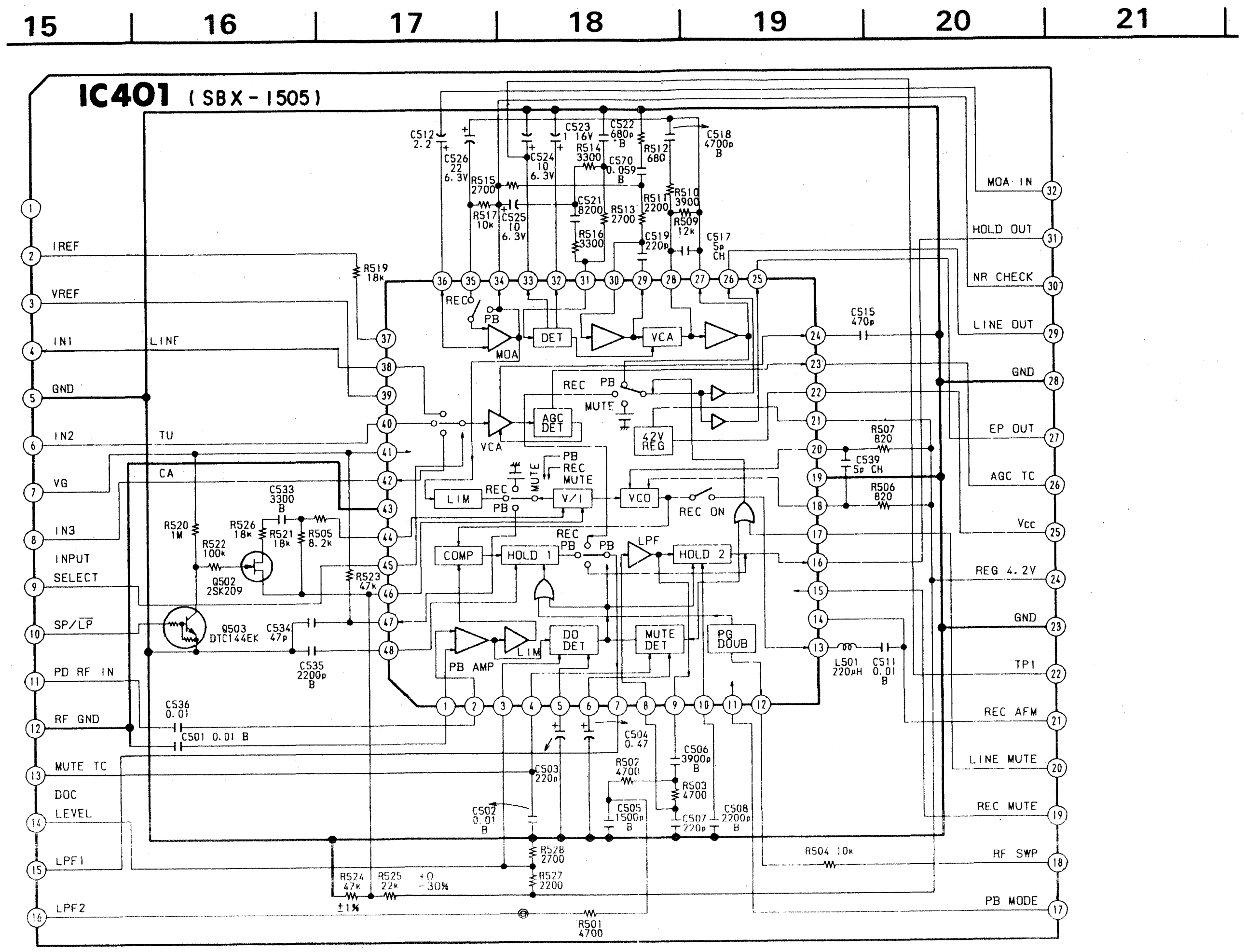
- Signal path

	VIDEO Signal			AUDIO Signal
	CHROMA	Y	Y/CHROMA	
REC	➡	➡	➡	➡
PB			⇨	⇨

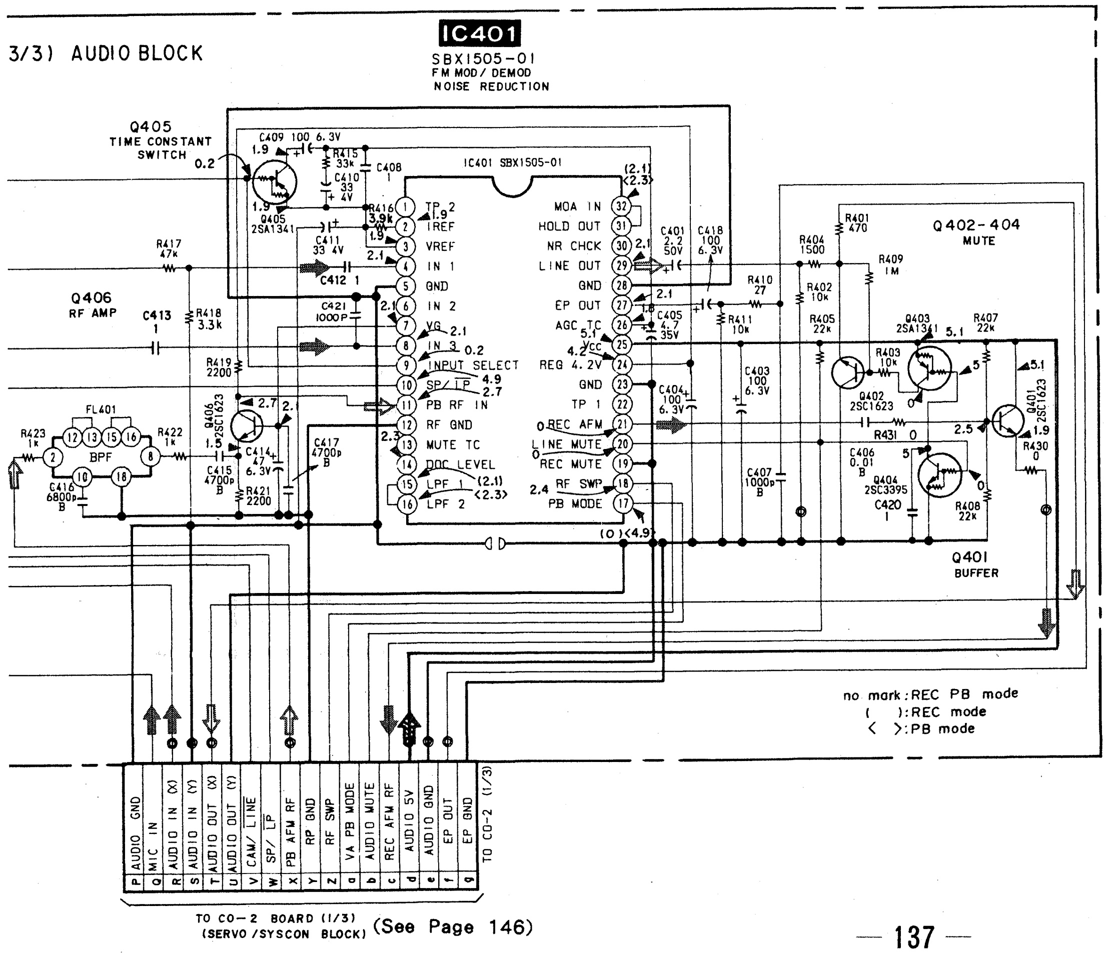

CO-2 BOARD (2/3) VIDEO HEAD AMP BLOCK
IC101
CXA1202R
REC/PB AMP
Q108
CURRENT SWITCH
Q114
SENS SW
Q116
DOC DET
ON/OFF SW
Q109,110
RF AMP
Q111
CURRENT SWITCH
Q112
AMP
Q113
ERASE OSC
Q101
RF AGC
GAIN SWITCH
Q102
PB RF
BUFFER
CH2 PB EQ
CH1 PB EQ
CN101
GND
FE (X)
FE (Y)
FE GND
CH1' (X)
CH1' (Y)
CH1' GND
CH2 (X)
CH2 (Y)
CH2 GND
CH1 (Y)
CH1 (X)
CH1 GND
TO DRUM
FLYING ERASE HEAD
VIDEO HEAD 2CH
VIDEO HEAD 1CH
CN102
N.C
PCM OUT
VIDEO RF OUT
RF SW P
GND
CHECK PIN
FE ON
RF SW P
SP/LP
WE/WP
REC ATF
RP SV
RP PB MODE
REC C
REC AFM RF
REC Y
JOG
DOC PULSE
RP GND
PB OUT
VA PB MODE
TO CO-2 BOARD (1/3) (SERVO/SYSCON BLOCK) (See Page 146)
no mark : REC PB mode
( ) : REC mode
< > : PB mode


CO-2 BOARD (HEADAMP)
①
0.6Vp-p
H
IC101 ⑯ PB
②
5.8Vp-p
H
IC101 ㉘, ㉝ REC
③
4.5Vp-p
2V
IC101 ㊴ REC/PB


IC401 (SBX
CO-2 BOARD (3/3) AUDIO BLOCK
Q405
TIME CONSTANT SWITCH
Q406
RF AMP
IREF
VREF
IN1
GND
IN2
VG
IN3
INPUT SELECT
SP/LP
PD RF IN
RF GND
MUTE TC
DOC LEVEL
LPF1
LPF2
AUDIO GND
MIC IN
AUDIO IN (X)
AUDIO IN (Y)
AUDIO OUT (Y)
CAM/LINE
TO CO-2
(SERVO/S


15
16
17
18
19
20
21
IC401 (SBX-1505)
IREF
VREF
IN1
GND
IN2
VG
IN3
INPUT SELECT
SP/LP
PD RF IN
RF GND
MUTE TC
DOC LEVEL
LPF1
LPF2
MOA IN
HOLD OUT
NR CHECK
LINE OUT
GND
EP OUT
AGC TC
Vcc
REG 4.2V
GND
TP1
REC AFM
LINE MUTE
REC MUTE
RF SWP
PB MODE
MOA
DET
VCA
AGC DET
4.2V REG
LIM
V/I
VCO
REC ON
COMP
HOLD 1
LPF
HOLD 2
PB AMP
DO DET
MUTE DET
PG DOUB
Q502 2SK209
Q503 DTC144EK

3/3) AUDIO BLOCK


IC401
SBX1505-01
FM MOD/DEMOD
NOISE REDUCTION
Q405
TIME CONSTANT
SWITCH
Q406
RF AMP
FL401
BPF
IC401 SBX1505-01
Q402-404
MUTE
Q401
BUFFER
no mark: REC PB mode
( ): REC mode
< >: PB mode
AUDIO GND
MIC IN
AUDIO IN (X)
AUDIO IN (Y)
AUDIO OUT (X)
AUDIO OUT (Y)
CAM/LINE
SP/LP
PB AFM RF
RP GND
RF SWP
VA PB MODE
REC AFM MUTE
REC AFM RF
AUDIO 5V
AUDIO GND
EP OUT
EP GND
TO CO-2 (1/3)

TO CO-2 BOARD (1/3)
(SERVO/SYSCON BLOCK) (See Page 146)

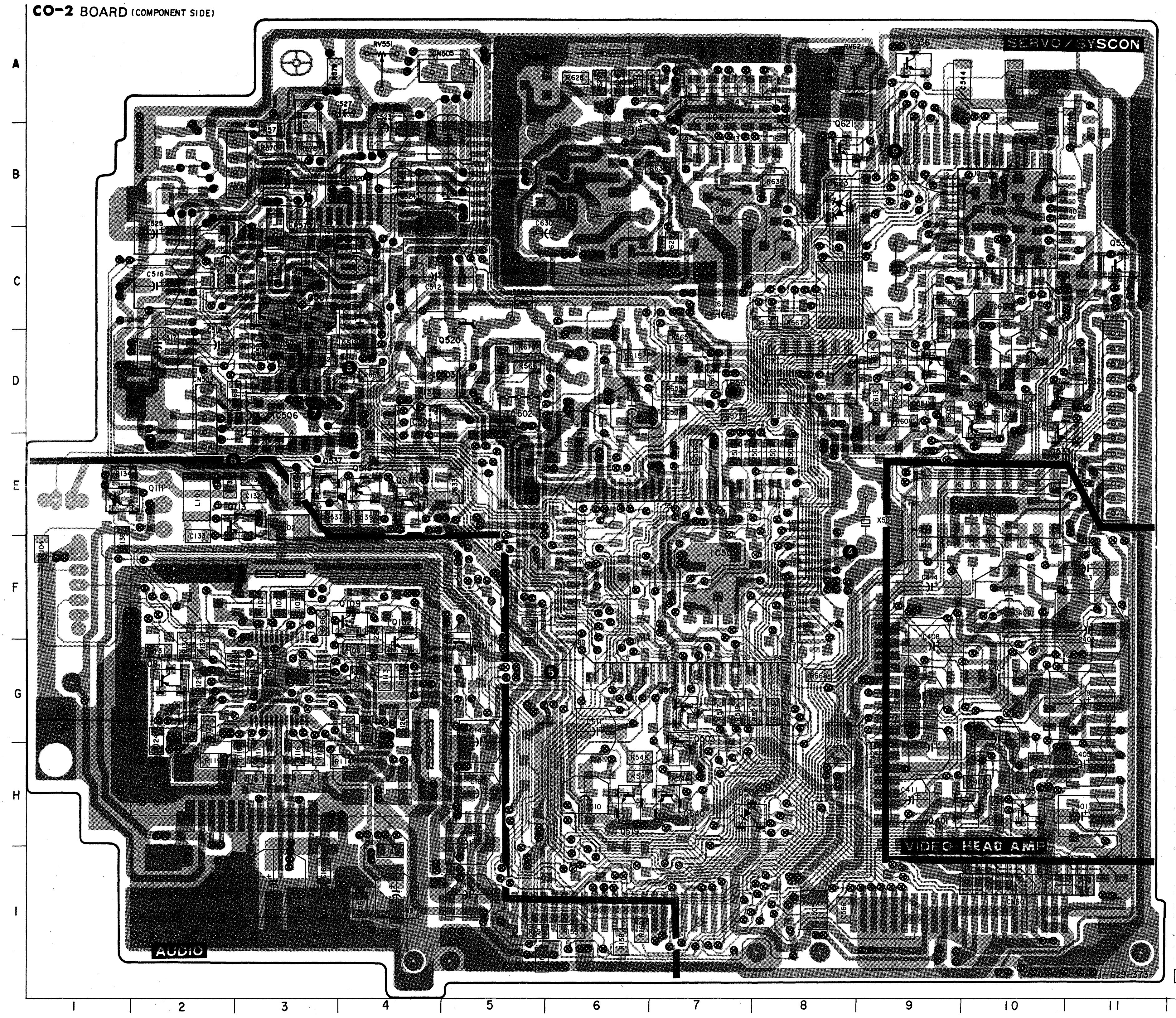
CO-2 (HEAD AMP, AUDIO/SERVO, SYSTEM CONTROL), CC-26 (TFG/SFG AMP), KS-6 (CAPSTAN MOTOR DRIVE JUNCTION), FP-89 (TAPE END SENSOR), FP-90 (TAPE TOP SENSOR) SCHEMATIC DIAGRAMS

— Ref. No. CO-2, FP-89 BOARDS: 6000 series, CC-26 BOARD: 7000 series, FP-90, KS-6 BOARDS: 8000 series —

CO-2 BOARD

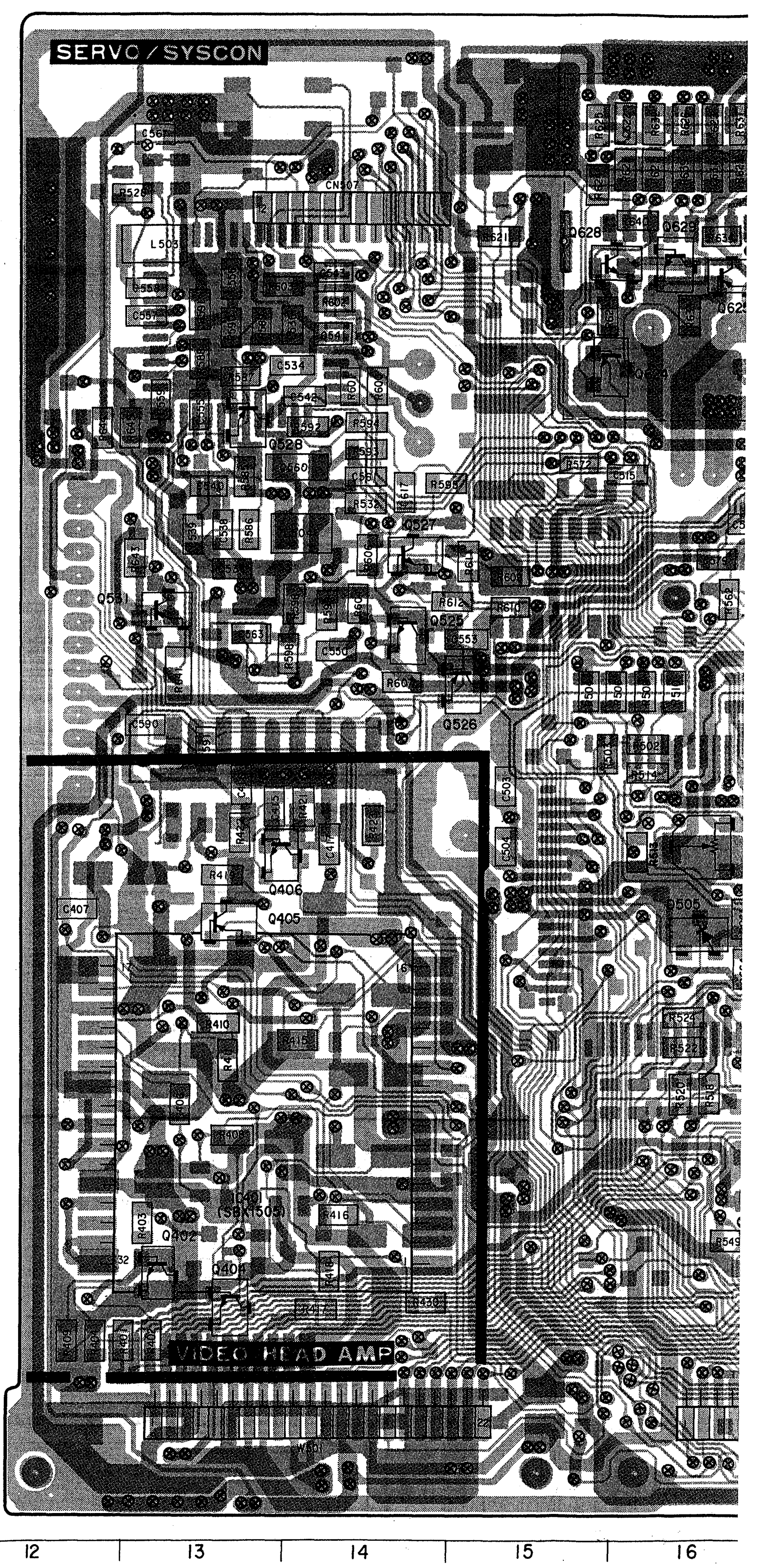
D504	H-8
D505	F-16
D621	A-18
D622	B-18
D623	B-8
IC101	G-20
IC401	G-13
IC501	F-7
IC502	D-5
IC503	D-5
IC504	B-19
IC505	D-4
IC506	D-3
IC507	B-20
IC508	C-20
IC509	B-10
IC510	D-8
IC621	A-7
Q102	F-4
Q108	G-2
Q109	F-4
Q110	F-19
Q111	E-1
Q112	E-21
Q113	E-3
Q114	G-5
Q116	G-18
Q401	H-10
Q402	H-13
Q403	H-10
Q404	H-13
Q405	F-13
Q406	F-13
Q503	H-7
Q504	G-7
Q506	C-3
Q507	C-3
Q515	E-4
Q516	E-19
Q517	E-4
Q518	H-17
Q519	H-6
Q520	D-5
Q521	D-19
Q522	B-21
Q524	D-17
Q525	D-14
Q526	E-15
Q527	D-14
Q528	C-13
Q529	D-9
Q530	D-10
Q531	D-13
Q532	D-11
Q533	E-10
Q534	C-11
Q535	B-21
Q536	A-9
Q537	E-3
Q538	E-19
Q539	H-17
Q540	H-7
Q621	B-8
Q622	A-17
Q623	A-17
Q624	C-16
Q625	B-16
Q626	B-17
Q627	B-17
Q628	B-16
Q629	B-16

CO-2 BOARD (COMPONENT SIDE)

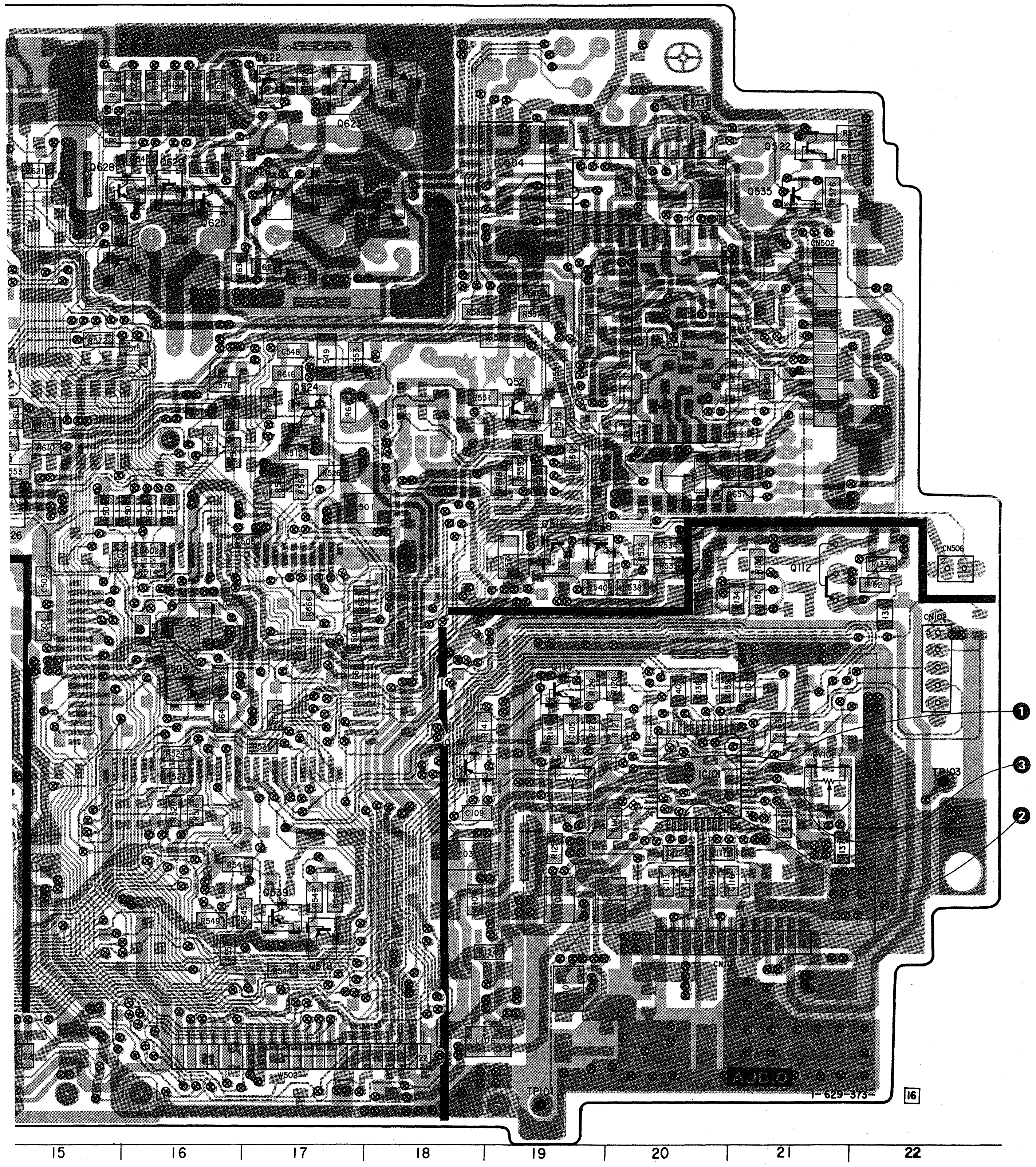


A
B
C
D
E
F
G
H
I
RV551
CN505
SERVO/SYSCON
VIDEO HEAD AMP
AUDIO
X501
1-629-373-
16
1
2
3
4
5
6
7
8
9
10
11

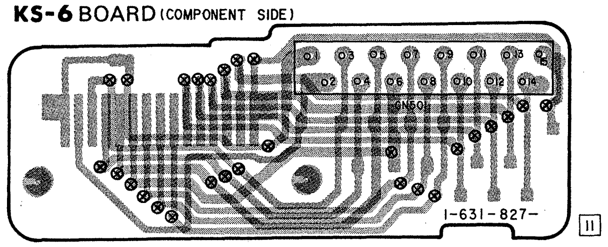
CO-2 BOARD (CONDUCTOR SIDE)



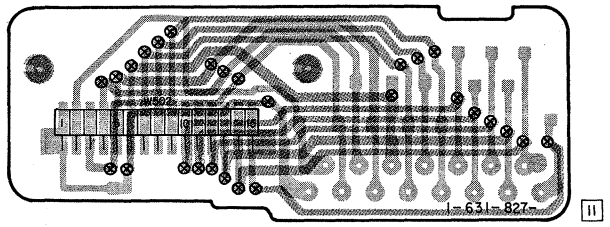
SERVO/SYSCON
VIDEO HEAD AMP
12
13
14
15
16


1-629-373-
16
TP101
TP103
CN506
CN102
CN101
CN502
IC101
IC504
Q112
Q505
Q539
Q518
Q522
Q535
Q623
Q625
Q628
15
16
17
18
19
20
21
22

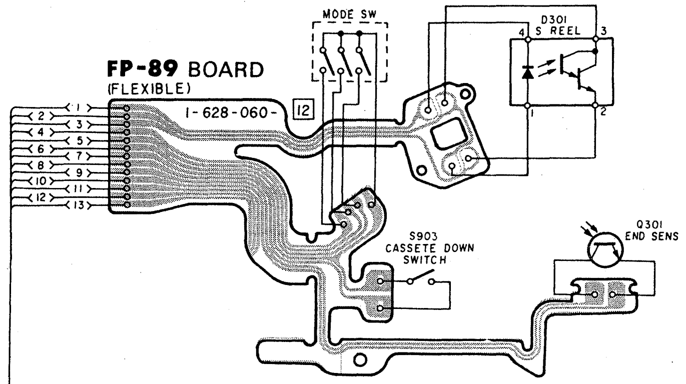
KS-6 BOARD (COMPONENT SIDE)


CN501
1-631-827-
11

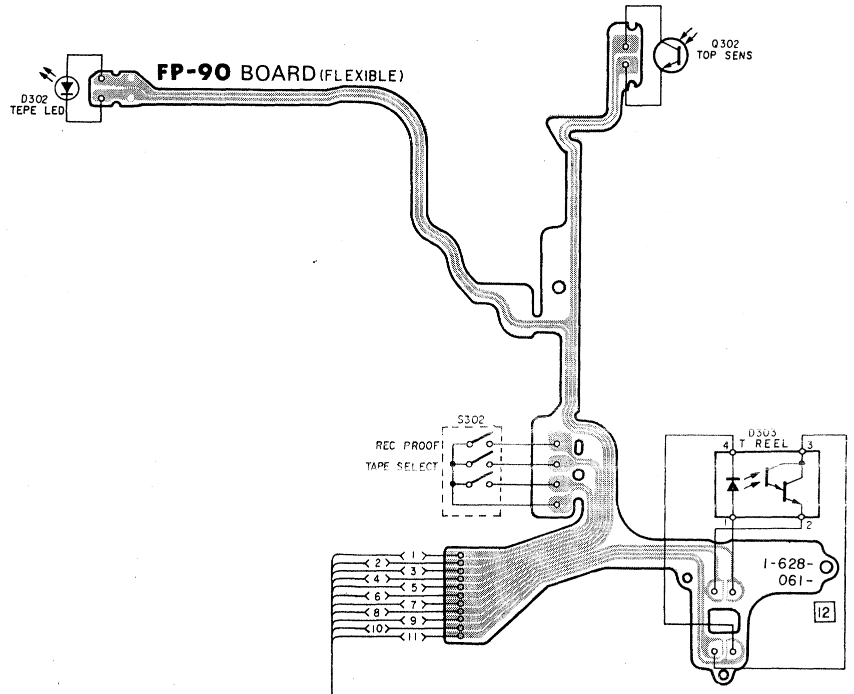
KS-6 BOARD (CONDUCTOR SIDE)


W502
1-631-827-
11

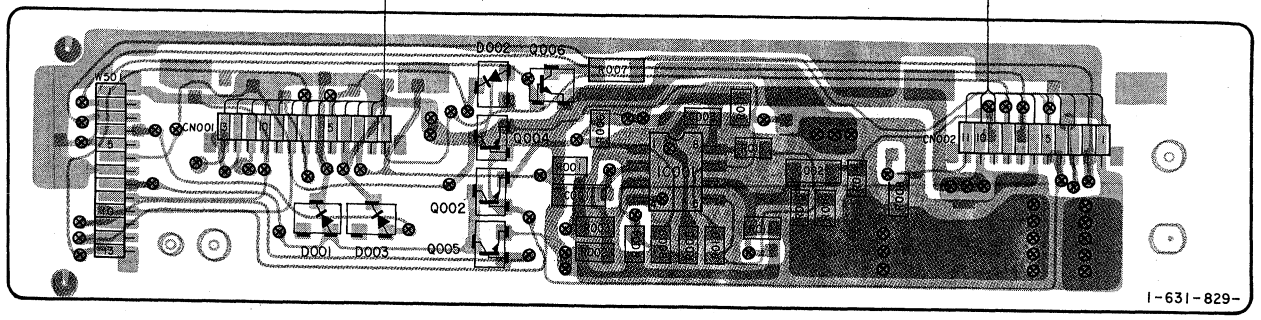
FP-89 BOARD (FLEXIBLE)


MODE SW
D301
S REEL
1-628-060-
12
S903
CASSETE DOWN
SWITCH
Q301
END SENS

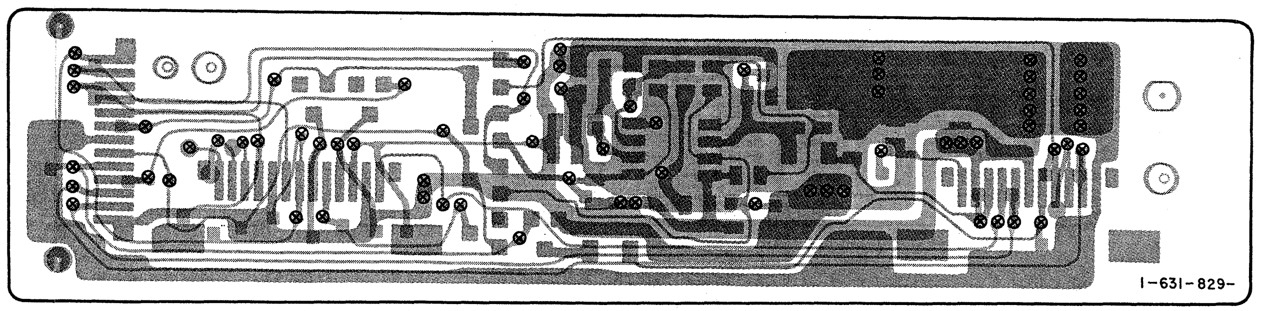
FP-90 BOARD (FLEXIBLE)


D302
TEPE LED
Q302
TOP SENS
S302
REC PROOF
TAPE SELECT
D303
T REEL
1-628-061-
12

CC-26 BOARD (COMPONENT SIDE)

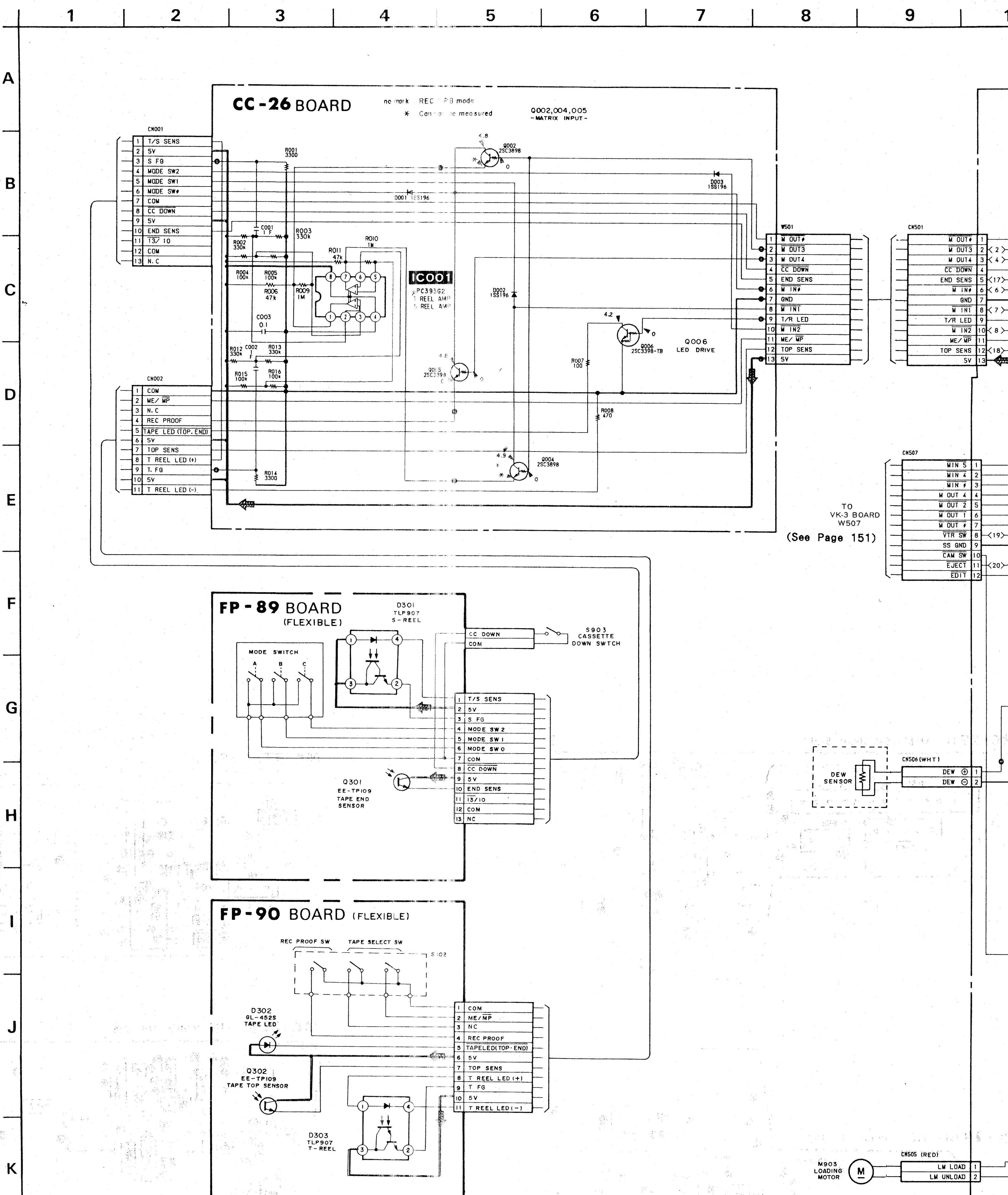

W501
CN001
CN002
D001
D002
D003
Q002
Q004
Q005
Q006
1-631-829-
11

CC-26 BOARD (CONDUCTOR SIDE)

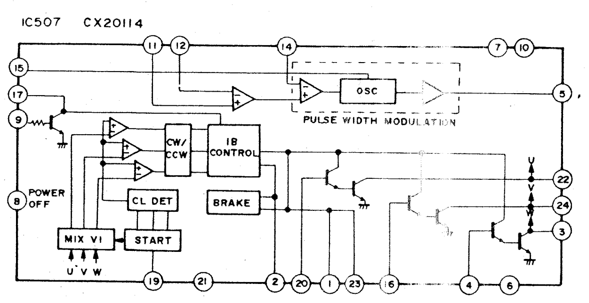


CO-2 (SERVO, SYSTEM CONTROL), CC-26 (TFG/SFG AMP), KS-6 (CAPSTAN MOTOR DRIVE JUNCTION), FP-89 (TAPE END SENSOR), FP-90 (

— Ref. No. CO-2, FP-89 BOARDS: 6000 series, CC-26 BOARD: 7000 series, FP-90, KS-6 BOARDS: 8000 series —



1
2
3
4
5
6
7
8
9
A
B
C
D
E
F
G
H
I
J
K
CC-26 BOARD
no mark : REC/PB mode
* : Can not be measured
Q002,004,005
-MATRIX INPUT-
CN001
T/S SENS
5V
S FG
MODE SW2
MODE SW1
MODE SW0
COM
CC DOWN
5V
END SENS
13/10
COM
N.C
IC001
μPC393G2
REEL AMP
Q006
LED DRIVE
CN002
COM
ME/MP
N.C
REC PROOF
TAPE LED (TOP·END)
5V
TOP SENS
T REEL LED (+)
T.FG
5V
T REEL LED (−)
W501
M OUT1
M OUT3
M OUT4
CC DOWN
END SENS
M IN0
GND
M IN1
T/R LED
M IN2
ME/MP
TOP SENS
5V
CN501
CN507
TO
VK-3 BOARD
W507
(See Page 151)
MIN 5
MIN 4
MIN 3
M OUT 4
M OUT 2
M OUT 1
M OUT 0
VTR SW
SS GND
CAM SW
EJECT
EDIT
FP-89 BOARD
(FLEXIBLE)
D301
TLP907
S-REEL
MODE SWITCH
S903
CASSETTE
DOWN SWITCH
Q301
EE-TP109
TAPE END
SENSOR
DEW
SENSOR
CN506 (WHT)
DEW ⊕
DEW ⊖
FP-90 BOARD (FLEXIBLE)
REC PROOF SW
TAPE SELECT SW
S102
D302
GL-452S
TAPE LED
Q302
EE-TP109
TAPE TOP SENSOR
D303
TLP907
T-REEL
M903
LOADING
MOTOR
CN505 (RED)
LM LOAD
LM UNLOAD



IC507 CX20114
OSC
PULSE WIDTH MODULATION
POWER OFF
CW/CCW
IB CONTROL
CL DET
BRAKE
MIX VI
START
U V W
L
M
N

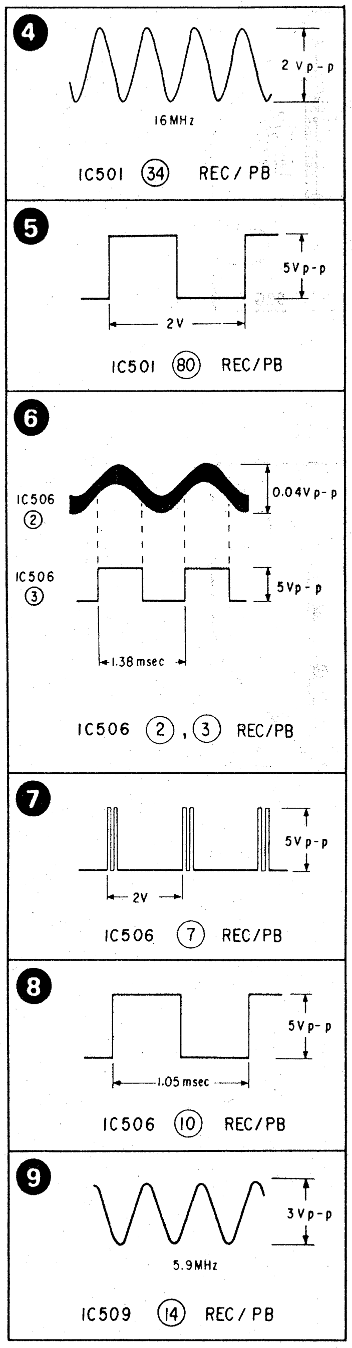
- Signal path

	VIDEO Signal			AUDIO Signal
	CHROMA	Y	Y/CHROMA	
REC	➡		➡»	➡
PB			⇨»	⇨

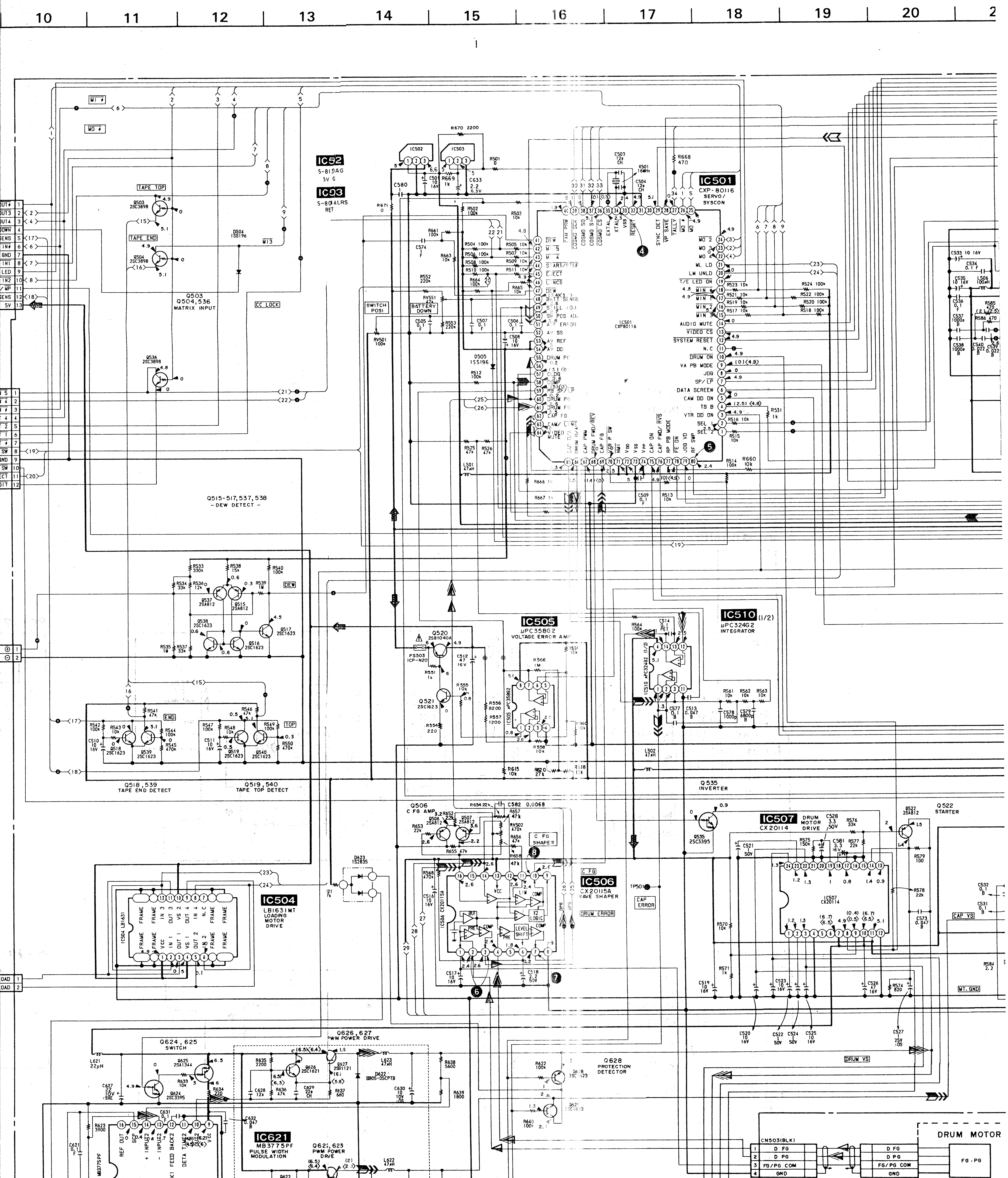
- Signal path

	REC	REC/PB	PB
Drum speed servo		▷	
Drum phase servo		▷»	
Drum servo (speed and phase)		▷»»	
Capstan speed servo			
Capstan phase servo			⊃»
Capstan servo (speed and phase)		⊃»	
Ref. signal	➤		⊃

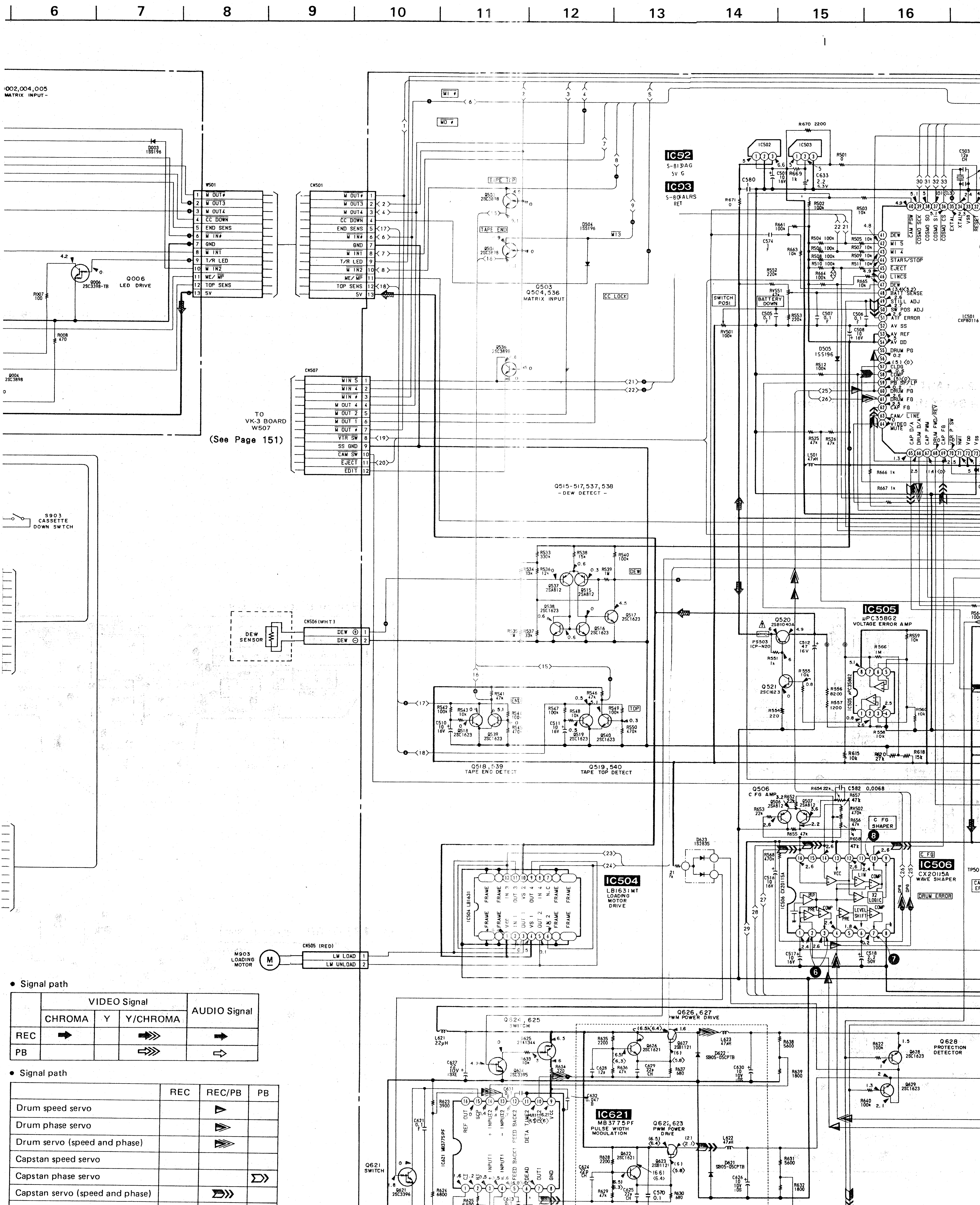
CO-2 BOARD (SERVO / SYSCON)



4
2Vp-p
16MHz
IC501 (34) REC / PB
5
5Vp-p
2V
IC501 (80) REC/PB
6
IC506 (2)
0.04Vp-p
IC506 (3)
5Vp-p
1.38msec
IC506 (2), (3) REC/PB
7
5Vp-p
2V
IC506 (7) REC/PB
8
5Vp-p
1.05msec
IC506 (10) REC/PB
9
3Vp-p
5.9MHz
IC509 (14) REC / PB


10
11
12
13
14
15
16
17
18
19
20
IC52
S-813AG
5V G
IC503
S-80 ALRS
RET
IC501
CXP-80116
SERVO/SYSCON
IC505
μPC358G2
VOLTAGE ERROR AMP
IC510 (1/2)
μPC324G2
INTEGRATOR
IC504
LB1631MT
LOADING MOTOR DRIVE
IC506
CX20115A
WAVE SHAPER
IC507
CX20114
DRUM MOTOR DRIVE
IC621
MB3775PF
PULSE WIDTH MODULATION
TAPE TOP
TAPE END
Q503, Q504, 536
MATRIX INPUT
CC LOCK
SWITCH POSI
BATTERY DOWN
Q515-517, 537, 538
- DEW DETECT -
DEW
END
TOP
Q518, 539
TAPE END DETECT
Q519, 540
TAPE TOP DETECT
Q520
Q521
Q506
C FG AMP
C FG SHAPER
DRUM ERROR
CAP ERROR
Q535
INVERTER
Q522
STARTER
CAP VS
MT. GND
DRUM VS
Q624, 625
SWITCH
Q626, 627
PWM POWER DRIVE
Q622, 623
PWM POWER DRIVE
Q628
PROTECTION DETECTOR
Q621
SWITCH
FREQUENCY
CN503 (BLK)
D FG
D PG
FG/PG COM
GND
CN504 (RED)
DRUM U
DRUM V
DRUM COM
DRUM W
DRUM MOTOR
FG·PG
M901
DRUM MOTOR

8000 series —

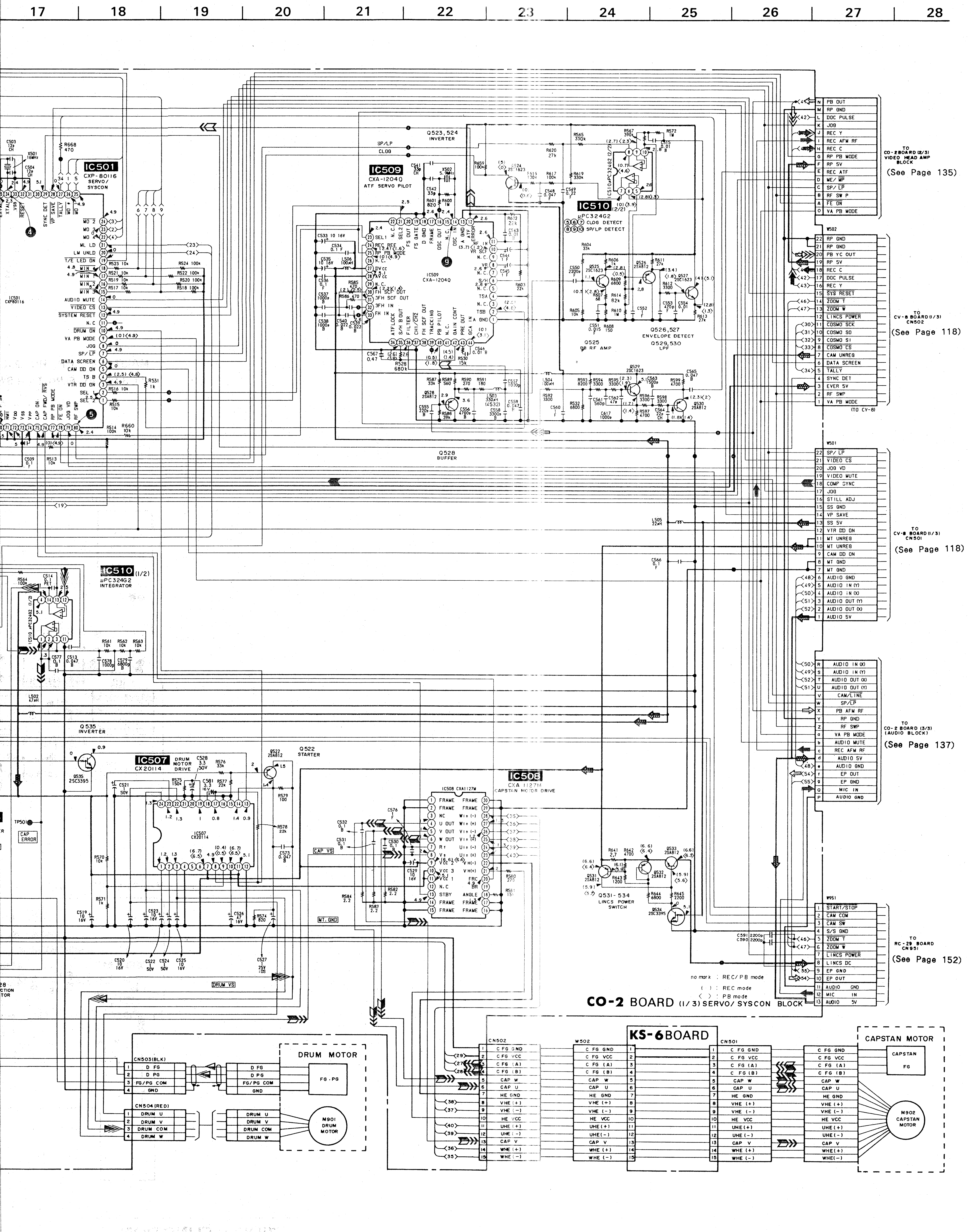

6
7
8
9
10
11
12
13
14
15
16
002,004,005 MATRIX INPUT
D003 1SS196
W501
M OUT#
M OUT3
M OUT4
CC DOWN
END SENS
M IN#
GND
M IN1
T/R LED
M IN2
ME/MP
TOP SENS
5V
Q006 2SC3398-TB
Q006 LED DRIVE
R007 100
R008 470
Q004 2SC3898
CN501
CN507
MIN 5
MIN 4
MIN #
M OUT 4
M OUT 2
M OUT 1
M OUT #
VTR SW
SS GND
CAM SW
EJECT
EDIT
TO VK-3 BOARD W507
(See Page 151)
S903 CASSETTE DOWN SWTCH
MI #
MO #
TAPE TOP
TAPE END
Q503 Q504, 536 MATRIX INPUT
D504 1SS196
M13
CC LOCK
IC502 S-8130AG 5V G
IC503 S-8054ALRS RET
R670 2200
C580
R501 0
C633 2.2 6.3V
R671 0
SWITCH POSI
BATTERY DOWN
RV551
RV501 100k
D505 1SS196
R512 100k
R525 47k
R526 47k
L501 47μH
R666 1k
R667 1k
IC501 CXP80116
DEW
MI 5
MI 4
START/STOP
EJECT
LINCS
DEW
BATT SENSE
STILL ADJ
SW POS ADJ
ATF ERROR
AV SS
AV REF
AV DD
DRUM PG
CLDG
COMP
PB SP/LP
DRUM PG
DRUM FG
CAP FG
CAM/ LINE
VIDEO MUTE
Q515-517, 537, 538 - DEW DETECT -
DEW
DEW SENSOR
CN506 (WHT)
DEW ⊕
DEW ⊖
Q520 2SB1040A
PS503 ICP-N20
Q521 2SC1623
IC505 μPC358G2 VOLTAGE ERROR AMP
R615 10k
R620 27k
R618 15k
Q518, 539 TAPE END DETECT
Q519, 540 TAPE TOP DETECT
Q506 C FG AMP
C582 0.0068
C FG SHAPER
D623 1S2835
IC504 LB1631MT LOADING MOTOR DRIVE
IC506 CX20115A WAVE SHAPER
DRUM ERROR
C FG
M903 LOADING MOTOR
CN505 (RED)
LM LOAD
LM UNLOAD
Q624, 625 SWITCH
Q626, 627 PWM POWER DRIVE
L621 22μH
IC621 MB3775PF PULSE WIDTH MODULATION
Q622, 623 PWM POWER DRIVE
D622 SB05-05CPTB
D621 SB05-05CPTB
L623 47μH
L622 47μH
Q628 PROTECTION DETECTOR
Q629 2SC1623
Q621 SWITCH
Q621 2SC3396
FREQUENCY
RV621 4700

- Signal path

	VIDEO Signal			AUDIO Signal
	CHROMA	Y	Y/CHROMA	
REC	➡		➡➡➡	➡
PB			⇨⇨⇨	⇨

- Signal path

	REC	REC/PB	PB
Drum speed servo		▷	
Drum phase servo		▷▷	
Drum servo (speed and phase)		▷▷▷	
Capstan speed servo			
Capstan phase servo			⊃⊃
Capstan servo (speed and phase)		⊃⊃⊃	
Ref. signal	▶▶▶		⊃

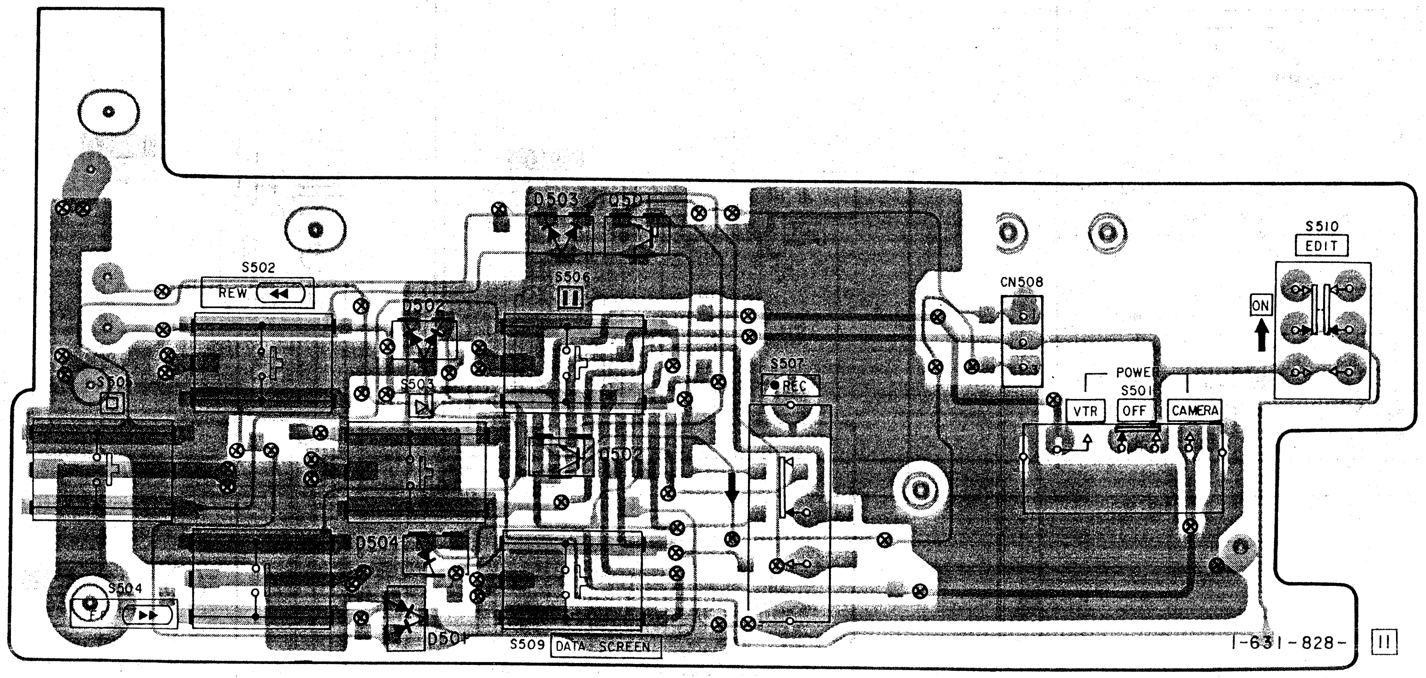

17
18
19
20
21
22
23
24
25
26
27
28
IC501
CXP-80116
SERVO/SYSCON
IC509
CXA-1204Q
ATF SERVO PILOT
Q523,524
INVERTER
IC510
µPC324G2
⑤⑥⑦ CLOG DETECT
⑧⑨⑩ SP/LP DETECT
Q525
PB RF AMP
Q526,527
ENVELOPE DETECT
Q529,530
LPF
Q528
BUFFER
IC510 (1/2)
µPC324G2
INTEGRATOR
Q535
INVERTER
IC507
CX20114
DRUM MOTOR DRIVE
Q522
STARTER
IC508
CXA1127M
CAPSTAN MOTOR DRIVE
Q531-534
LINCS POWER SWITCH
CAP VS
MT. GND
DRUM VS
TP501
CAP ERROR
TO CO-2 BOARD (2/3) VIDEO HEAD AMP BLOCK
(See Page 135)
TO CV-8 BOARD (1/3) CN502
(See Page 118)
(TO CV-8)
TO CV-8 BOARD (1/3) CN501
(See Page 118)
TO CO-2 BOARD (3/3) (AUDIO BLOCK)
(See Page 137)
TO RC-29 BOARD CN951
(See Page 152)
W502
W501
W951
PB OUT
RP GND
DOC PULSE
JOG
REC Y
REC AFM RF
REC C
RP PB MODE
RP 5V
REC ATF
ME/MP
SP/LP
RF SW P
FE ON
VA PB MODE
PB YC OUT
SYS RESET
ZOOM T
ZOOM W
LINCS POWER
COSMO SCK
COSMO SO
COSMO SI
COSMO CS
CAM UNREG
DATA SCREEN
TALLY
SYNC DET
EVER 5V
RF SWP
VIDEO CS
JOG VD
VIDEO MUTE
COMP SYNC
STILL ADJ
SS GND
VP SAVE
SS 5V
VTR DD ON
MT UNREG
CAM DD ON
MT GND
AUDIO GND
AUDIO IN (Y)
AUDIO IN (X)
AUDIO OUT (Y)
AUDIO OUT (X)
AUDIO 5V
CAM/LINE
PB AFM RF
VA PB MODE
AUDIO MUTE
REC AFM RF
EP OUT
EP GND
MIC IN
START/STOP
CAM COM
CAM SW
S/S GND
LINCS DC
no mark : REC/PB mode
( ) : REC mode
< > : PB mode
CN503 (BLK)
D FG
D PG
FG/PG COM
GND
CN504 (RED)
DRUM U
DRUM V
DRUM COM
DRUM W
DRUM MOTOR
FG·PG
M901 DRUM MOTOR
KS-6 BOARD
CN502
W502
CN501
C FG GND
C FG VCC
C FG (A)
C FG (B)
CAP W
CAP U
HE GND
VHE (+)
VHE (-)
HE VCC
UHE (+)
UHE (-)
CAP V
WHE (+)
WHE (-)
CAPSTAN MOTOR
CAPSTAN FG
M902 CAPSTAN MOTOR

CO-2 BOARD (1/3) SERVO/SYSCON BLOCK

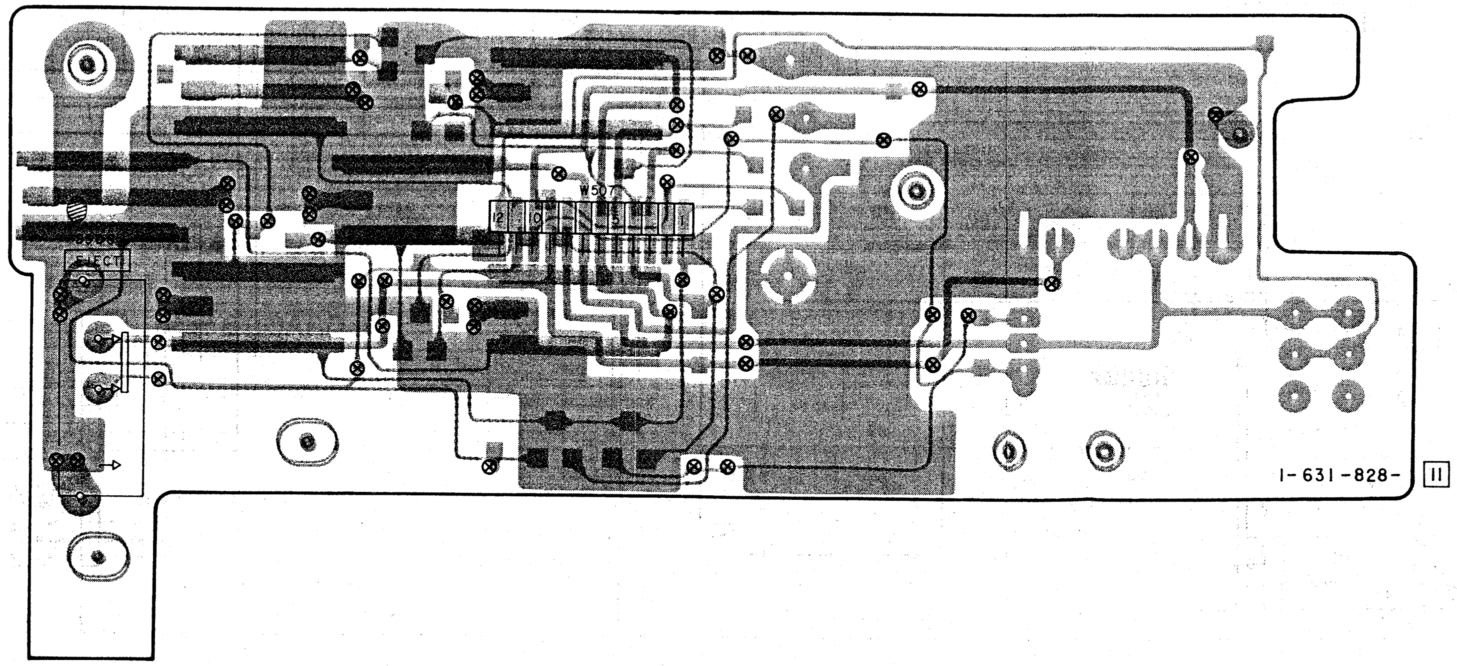
MA-37 (MIC AMP), RC-29 (START/STOP SWITCH), VK-3 (VIDEO FUNCTION SWITCH) PRINTED WIRING BOARDS

— Ref. No. MA-37, VK-3 BOARDS: 9000 series, RC-29, BOARD: 10000 series —

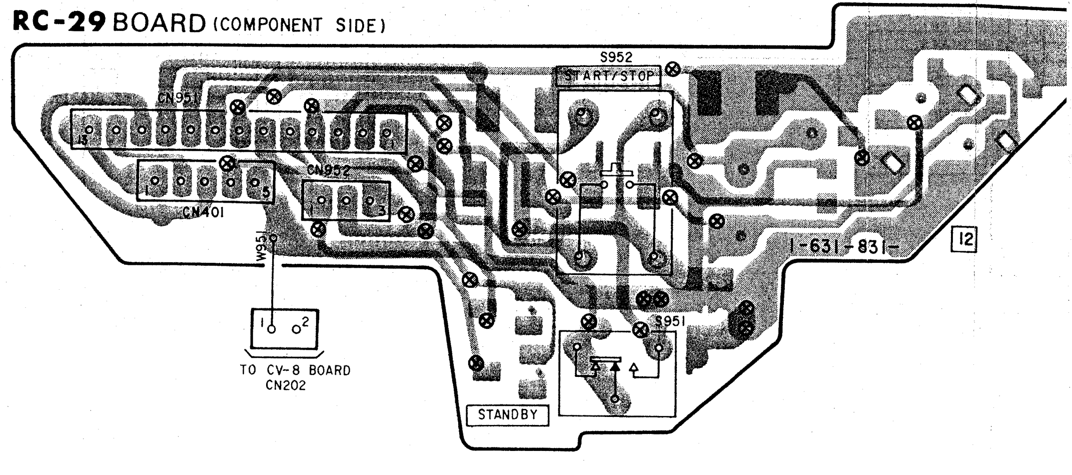
VK-3 BOARD (COMPONENT SIDE)


D503
D501
S502
REW
S506
D502
S505
S503
S507
REC
CN508
POWER
S501
VTR
OFF
CAMERA
ON
S510
EDIT
D504
S504
D501
S509
DATA SCREEN
1-631-828-
11

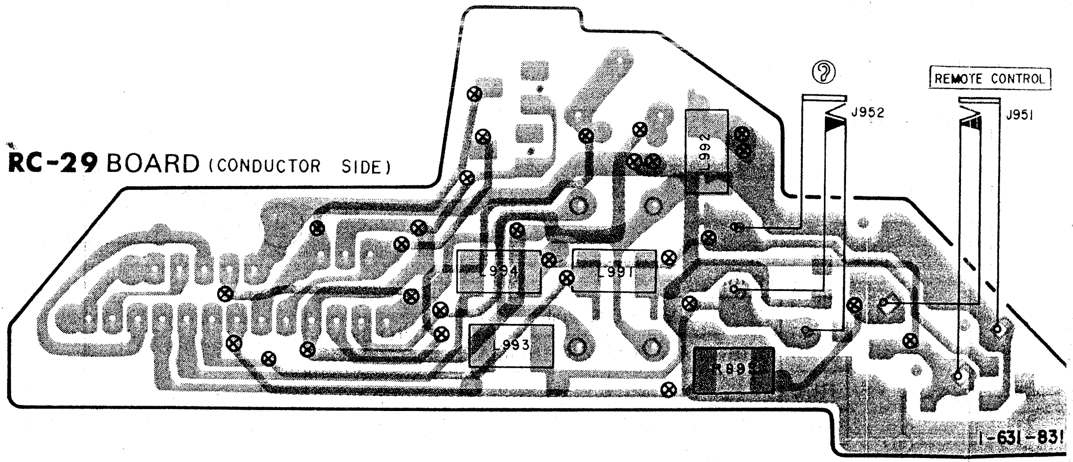
VK-3 BOARD (CONDUCTOR SIDE)


W507
12
10
5
1
EJECT
1-631-828-
11

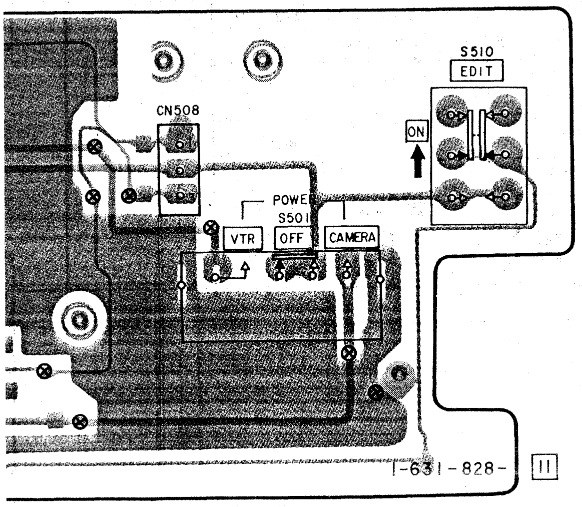
RC-29 BOARD (COMPONENT SIDE)

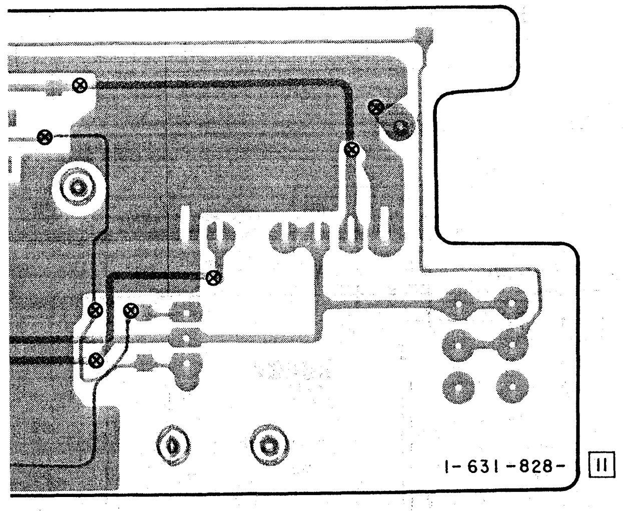

S952
START/STOP
CN951
13
1
CN952
1
3
CN401
1
5
W951
1
2
TO CV-8 BOARD
CN202
STANDBY
S951
1-631-831-
12

RC-29 BOARD (CONDUCTOR SIDE)

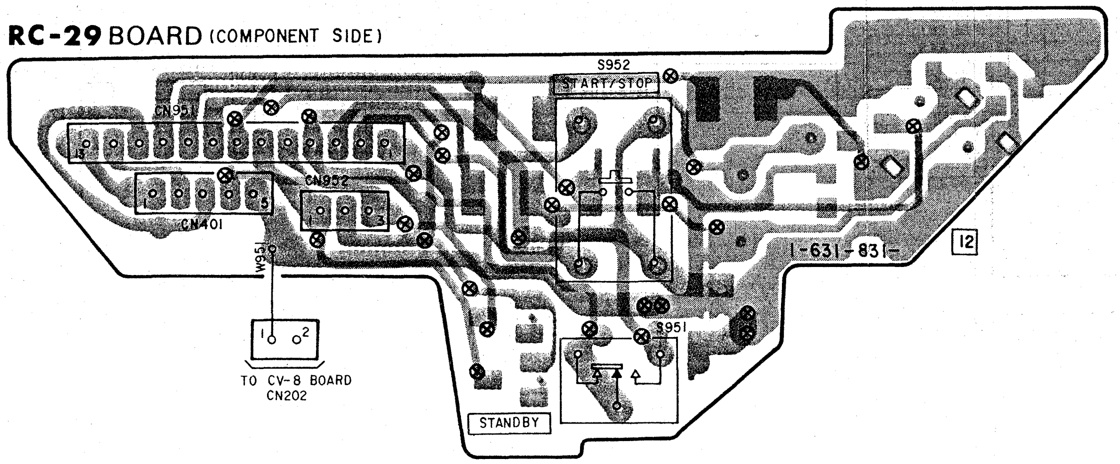

REMOTE CONTROL
J952
J951
L992
L994
L991
L993
R993
1-631-831

-147-

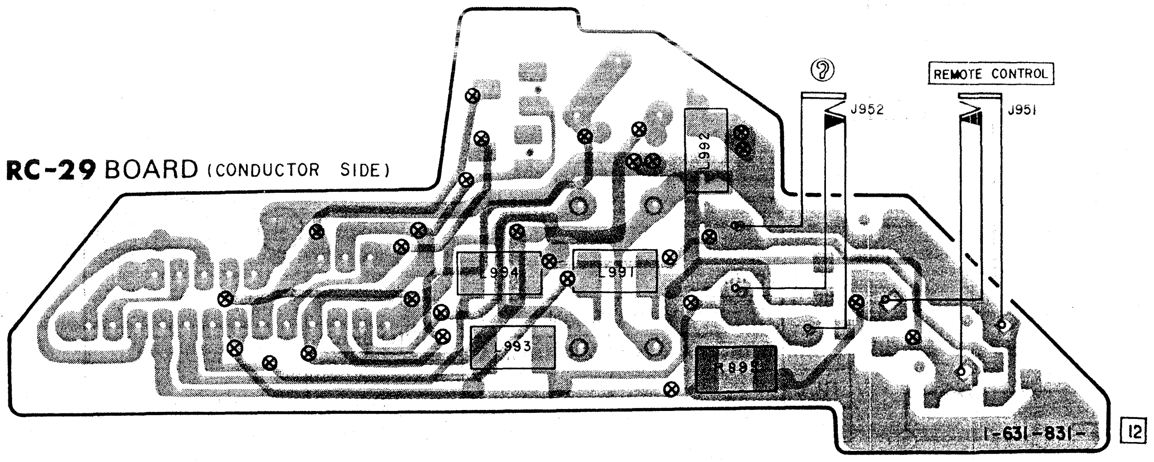

S510
EDIT
ON
CN508
POWER
S501
VTR
OFF
CAMERA
1-631-828-
11



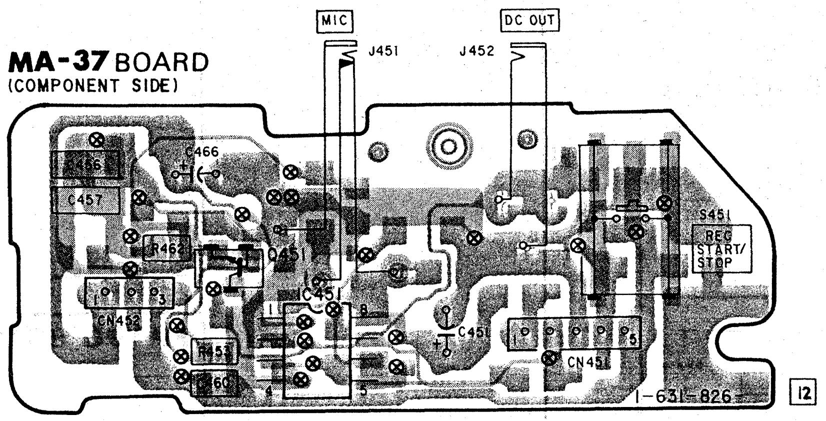
RC-29 BOARD (COMPONENT SIDE)


S952
START/STOP
CN951
CN952
CN401
W951
TO CV-8 BOARD
CN202
S951
STANDBY
1-631-831-
12

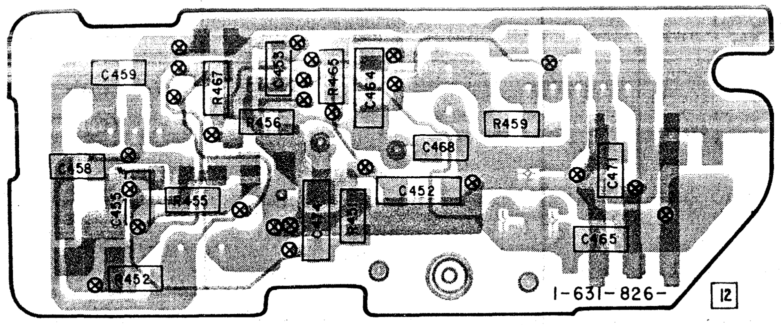
RC-29 BOARD (CONDUCTOR SIDE)


REMOTE CONTROL
J952
J951
L992
L994
L991
L993
L895
1-631-831-
12

MA-37 BOARD
(COMPONENT SIDE)

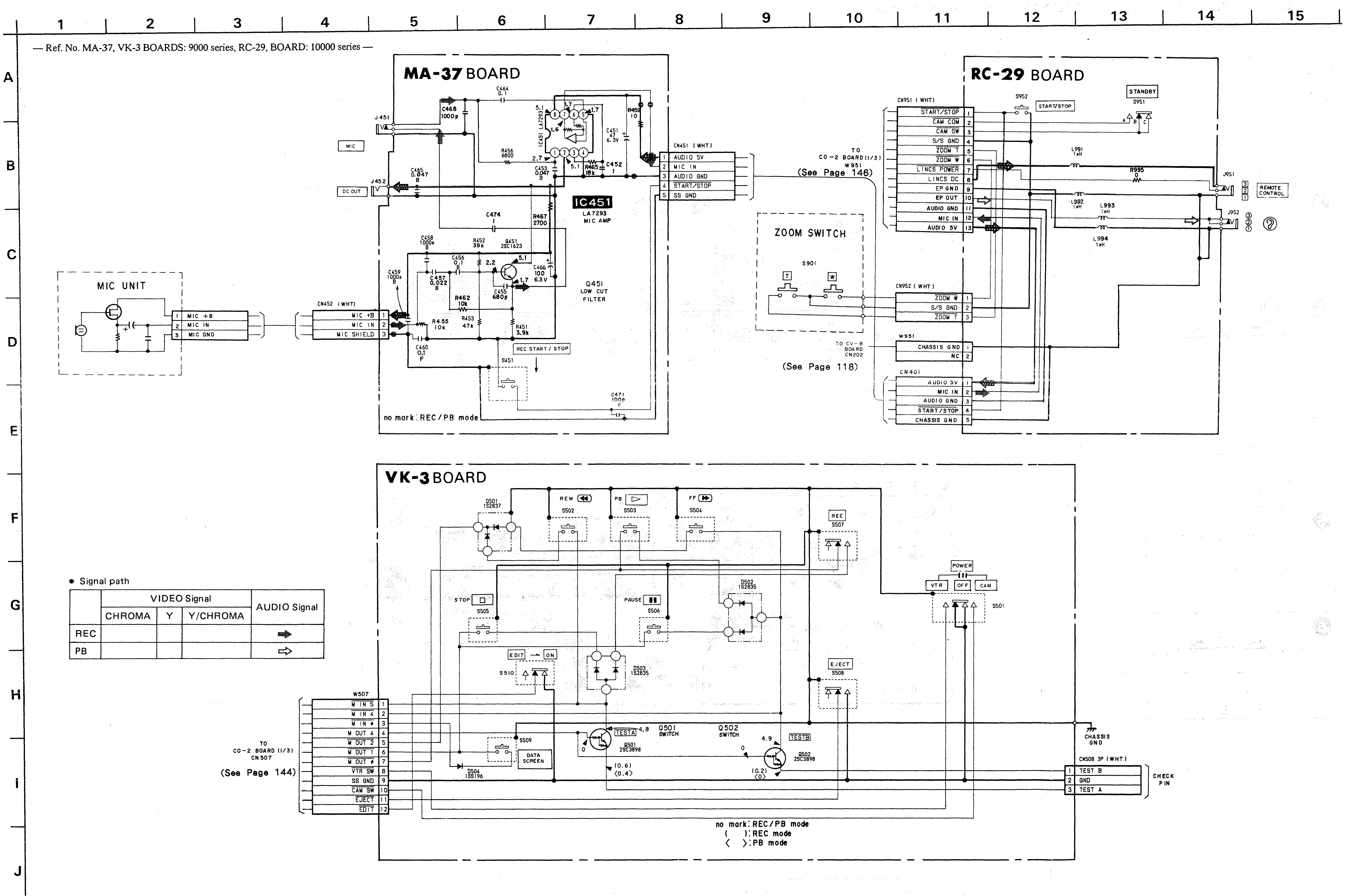

MIC
DC OUT
J451
J452
C466
R456
C457
R462
IC451
CN452
R457
R460
C451
C453
CN451
S451
REC
START/
STOP
1-631-826-
12

MA-37 BOARD (CONDUCTOR SIDE)


C459
R461
R453
R465
C454
R456
R459
C468
C458
C455
R455
C452
C471
R452
C465
1-631-826-
12

MA-37 (MIC AMP), RC-29 (START/STOP SWITCH), VK-3 (VIDEO FUNCTION SWITCH) SCHEMATIC DIAGRAMS

— Ref. No. MA-37, VK-3 BOARDS: 9000 series, RC-29, BOARD: 10000 series —



1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
A B C D E F G H I J
MA-37 BOARD
RC-29 BOARD
VK-3 BOARD
MIC UNIT
MIC +B
MIC IN
MIC GND
CN452 (WHT)
MIC SHIELD
J451
MIC
J452
DC OUT
C468 1000p
C464 0.1
C465 0.047 B
IC451 LA7293
IC451
LA7293
MIC AMP
R456 6800
R459 10
C451 47 6.3V
C452 1
C453 0.047 B
R465 18k
C474
R467 2700
C458 1000p B
R452 39k
Q451 2SC1623
C456 0.1 B
C457 0.022 B
C459 1000p B
C466 100 6.3V
C455 680p
R462 10k
R455 10k
R453 47k
R451 3.9k
C460 0.1 F
REC START/STOP
S451
C471 100p F
Q451
LOW CUT
FILTER
no mark: REC/PB mode
CN451 (WHT)
AUDIO 5V
MIC IN
AUDIO GND
START/STOP
SS GND
TO CO-2 BOARD (1/3) W951
(See Page 146)
ZOOM SWITCH
S901
T
W
TO CV-8 BOARD CN202
(See Page 118)
CN951 (WHT)
START/STOP
CAM COM
CAM SW
S/S GND
ZOOM T
ZOOM W
LINCS POWER
LINCS DC
EP GND
EP OUT
AUDIO GND
MIC IN
AUDIO 5V
S952
START/STOP
STANDBY
S951
L991 1μH
L992 1μH
L993 1μH
L994 1μH
R995 0
J951
REMOTE CONTROL
J952
CN952 (WHT)
ZOOM W
S/S GND
ZOOM T
W951
CHASSIS GND
NC
CN401
AUDIO 5V
MIC IN
AUDIO GND
START/STOP
CHASSIS GND
D501 1S2837
REW
S502
PB
S503
FF
S504
REC
S507
STOP
S505
PAUSE
S506
D502 1S2835
POWER
VTR
OFF
CAM
S501
EDIT → ON
S510
D503 1S2835
EJECT
S508
W507
M IN 5
M IN 4
M IN #
M OUT 4
M OUT 2
M OUT 1
M OUT #
VTR SW
SS GND
CAM SW
EJECT
EDIT
TO CO-2 BOARD (1/3) CN507
(See Page 144)
S509
DATA SCREEN
D504 1SS196
TESTA
Q501 SWITCH
Q501 2SC3898
Q502 SWITCH
TESTB
Q502 2SC3898
(0.6) 〈0.4〉
(0.2) 〈0〉
CHASSIS GND
CN508 3P (WHT)
TEST B
GND
TEST A
CHECK PIN
no mark: REC/PB mode
( ): REC mode
〈 〉: PB mode

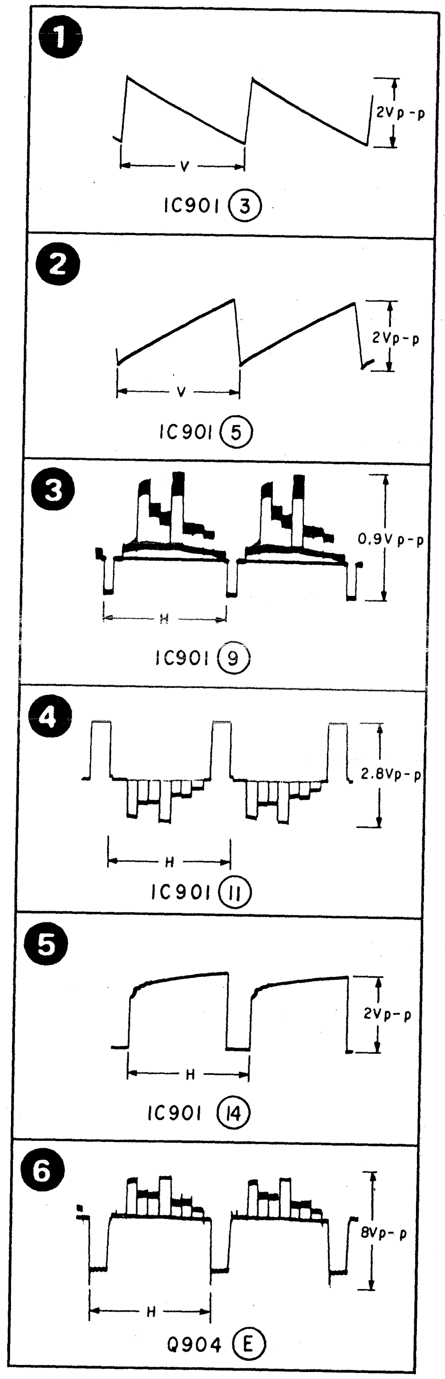
- Signal path

	VIDEO Signal			AUDIO Signal
	CHROMA	Y	Y/CHROMA	
REC				➡
PB				⇨

VF-14 (ELECTRONIC VIEW FIDER), LD-13 (TALLY LED) PRINTED WIRING BOARDS

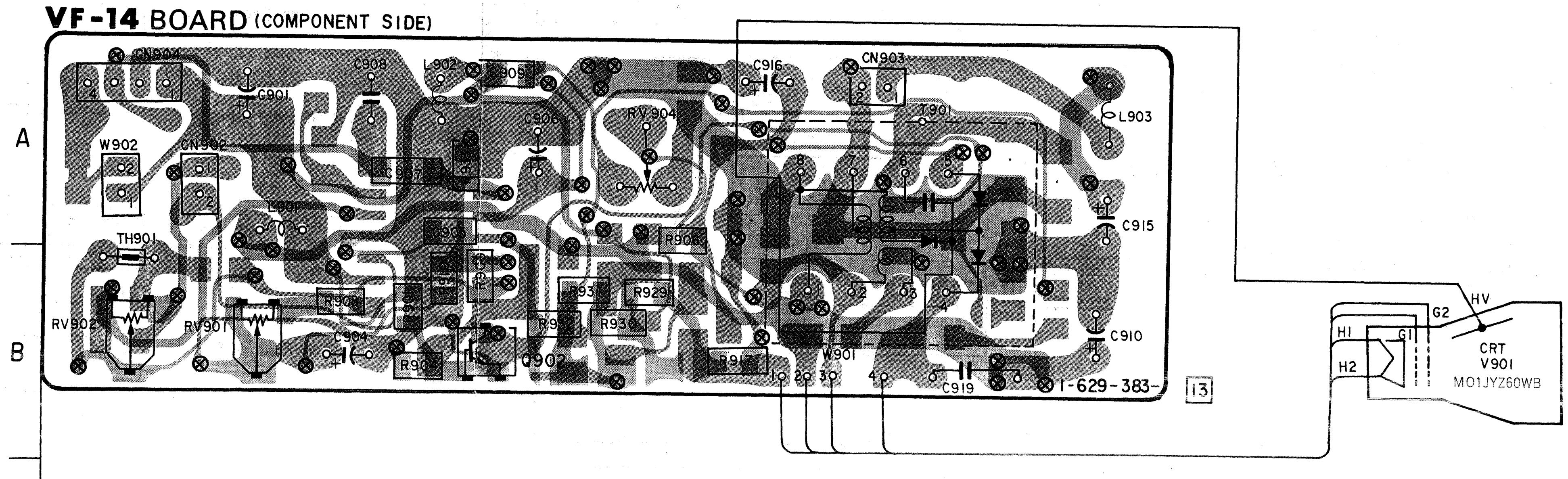
— Ref. No. VF-14 BOARD: 7000 series, LD-13 BOARD: 8000 series —

VF-14 BOARD

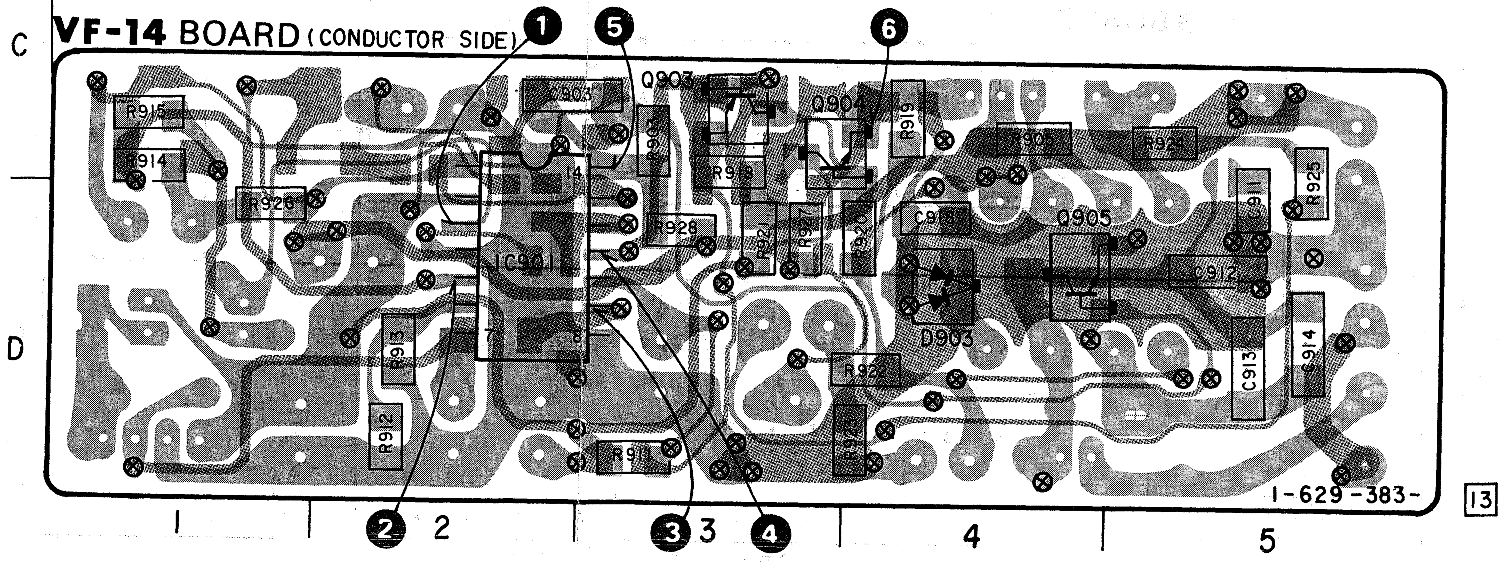


VF-14 BOARD	
D903	D-4
IC901	D-2
Q902	B-3
Q903	C-3
Q904	C-3
Q905	D-4

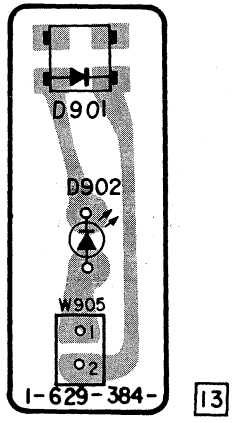
VF-14 BOARD (COMPONENT SIDE)


A
B
CN904
C901
C908
L902
R909
C916
CN903
L903
T901
C906
RV904
W902
CN902
C907
C915
L901
TH901
R903
R906
R908
R935
R929
RV902
RV901
C904
R902
R932
R930
Q902
R917
W901
C910
C919
1-629-383-
13
HV
G2
H1
G1
H2
CRT
V901
M01JYZ60WB

VF-14 BOARD (CONDUCTOR SIDE) ❶ ❺ ❻

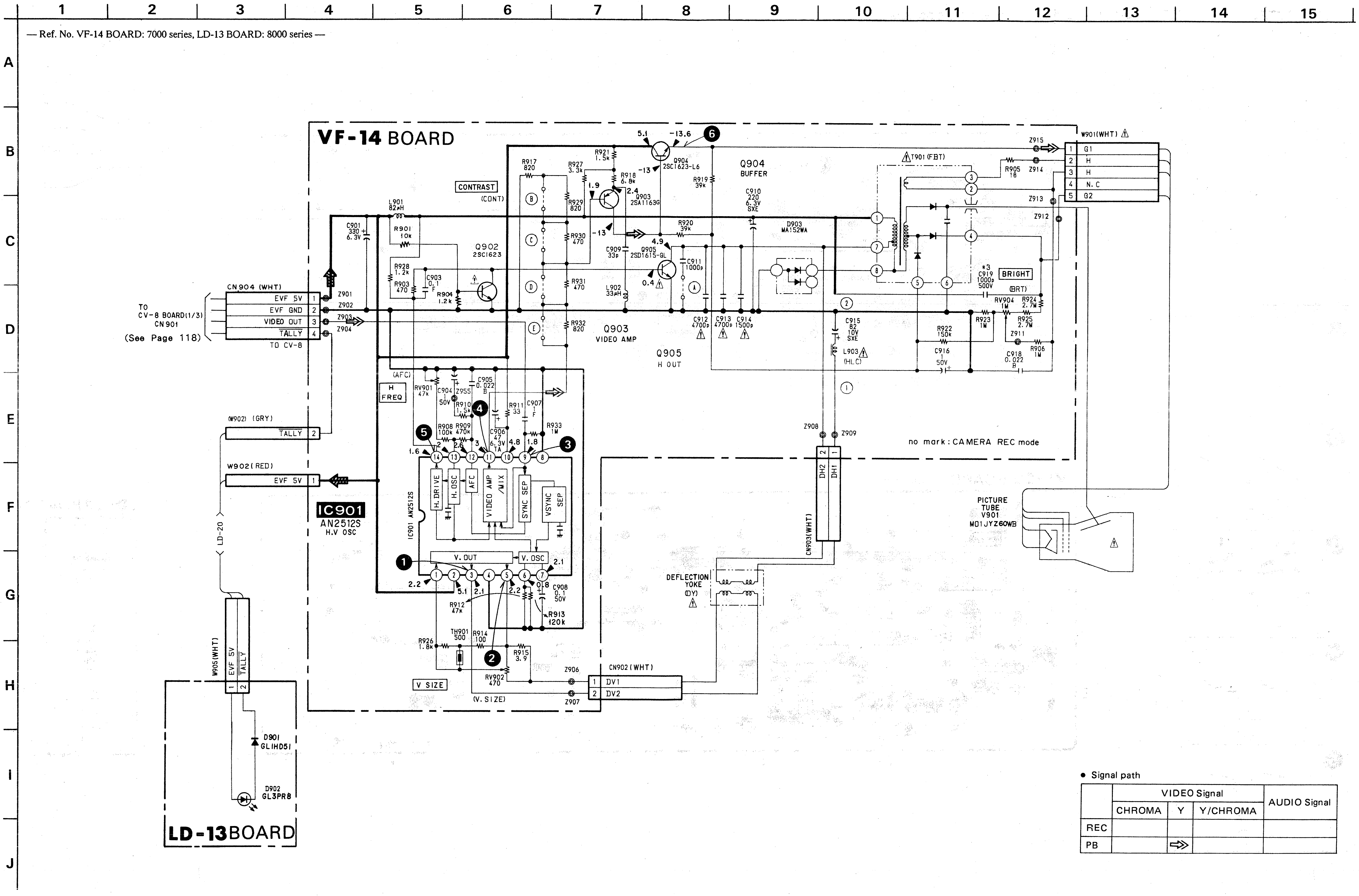

C
D
R915
R914
R926
C903
Q903
R907
R918
Q904
R919
R905
R924
R928
R921
R927
R920
C918
Q905
C911
R925
IC901
14
7
8
C912
D903
R913
R912
R922
C913
C914
R911
R923
1-629-383-
13
❷ 2
❸ 3
❹
1
4
5

LD-13 BOARD


D901
D902
W905
1
2
1-629-384-
13

VF-14 (ELECTRONIC VIEW FIDER), LD-13 (TALLY LED) SCHEMATIC DIAGRAMS

— Ref. No. VF-14 BOARD: 7000 series, LD-13 BOARD: 8000 series —



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A
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F
G
H
I
J
VF-14 BOARD
LD-13 BOARD
CN904 (WHT)
EVF 5V
EVF GND
VIDEO OUT
TALLY
TO CV-8 BOARD(1/3) CN901
(See Page 118)
TO CV-8
Z901
Z902
Z903
Z904
(W902) (GRY)
TALLY
W902 (RED)
EVF 5V
LD-20
W905 (WHT)
EVF 5V
TALLY
D901 GL1HD51
D902 GL3PR8
IC901
AN2512S
H.V OSC
H. DRIVE
H. OSC
AFC
VIDEO AMP /MIX
SYNC SEP
VSYNC SEP
V. OUT
V. OSC
H FREQ
(AFC)
V SIZE
(V. SIZE)
CONTRAST
(CONT)
BRIGHT
(BRT)
Q902 2SC1623
Q903 2SA1163G
Q903 VIDEO AMP
Q904 2SC1623-L6
Q904 BUFFER
Q905 2SD1615-GL
Q905 H OUT
D903 MA152WA
L901 82μH
L902 33μH
L903 (HLC)
T901 (FBT)
W901 (WHT)
G1
H
H
N. C
G2
Z915
Z914
Z913
Z912
Z911
Z908
Z909
Z906
Z907
CN902 (WHT)
DV1
DV2
CN903 (WHT)
DH2
DH1
DEFLECTION YOKE (DY)
PICTURE TUBE V901 M01JYZ60WB
no mark : CAMERA REC mode
TH901 500
RV901 47k
RV902 470
RV904 1M

• Signal path

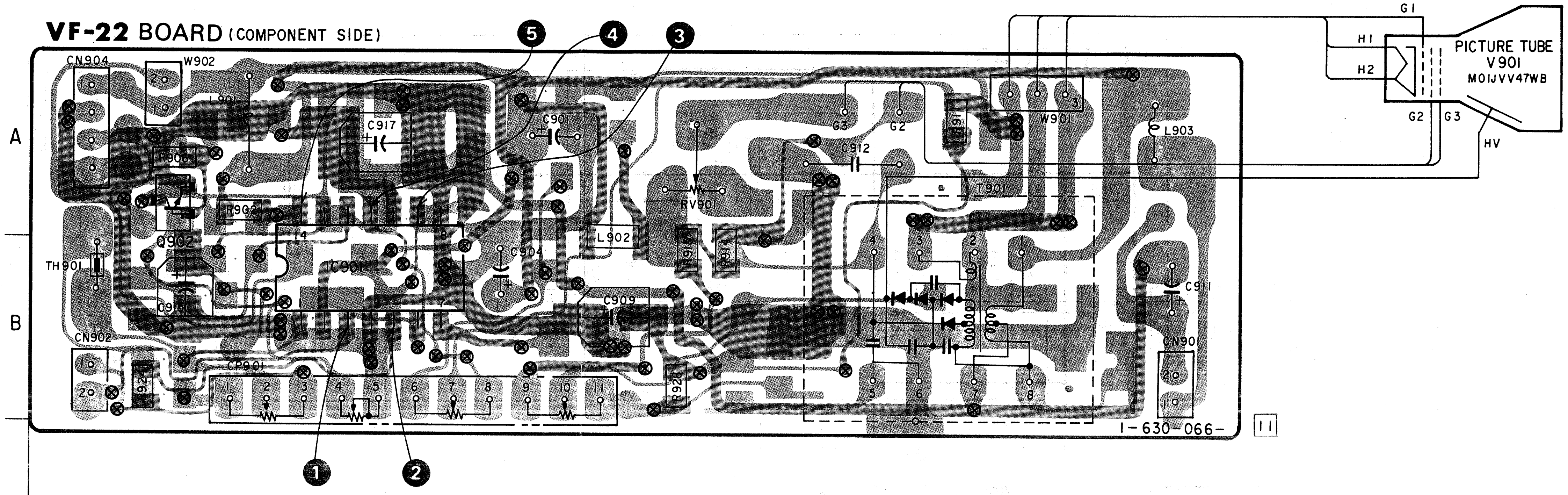
	VIDEO Signal			AUDIO Signal
	CHROMA	Y	Y/CHROMA	
REC				
PB		⇨		

VF-22 (ELECTRONIC VIEW FIDER), LD-17 (TALLY LED) PRINTED WIRING BOARDS

— Ref. No. VF-22 BOARD: 4000 series, LD-17 BOARD: 5000 series —

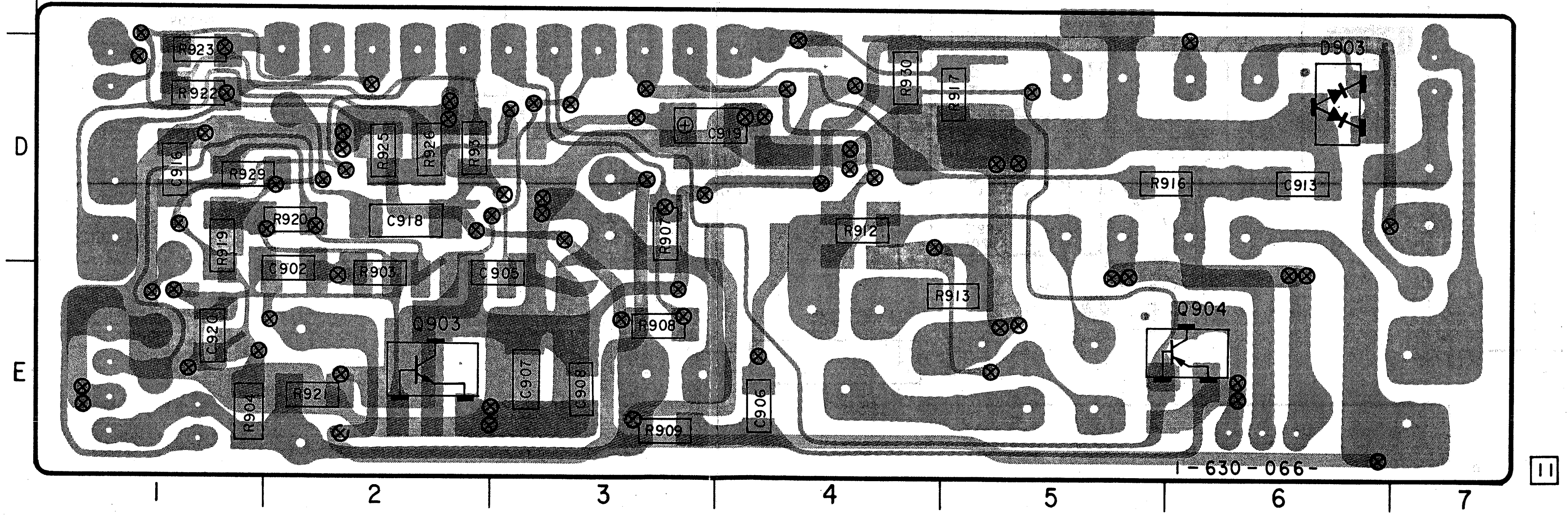
VF-22 BOARD	
D903	D-6
IC901	B-2
Q902	A-1
Q903	E-2
Q904	E-6

VF-22 BOARD (COMPONENT SIDE)



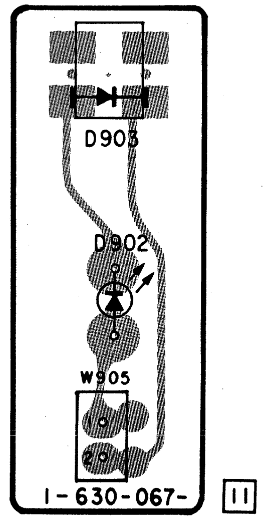
A
B
CN904
W902
L901
R906
C917
C901
Q902
R902
TH901
IC901
C915
CN902
CP901
C904
C909
L902
RV901
R914
R928
C912
G3
G2
T901
W901
L903
C911
CN901
1-630-066-
11
G1
H1
H2
PICTURE TUBE
V901
M01JVV47WB
HV

VF-22 BOARD (CONDUCTOR SIDE)



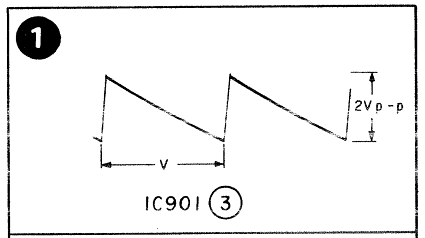
C
D
E
R923
R922
C916
R929
R925
R926
R920
C918
R919
C902
R903
C906
Q903
R908
C907
C908
R904
R921
R909
C919
R930
R917
R912
R913
C906
R916
C913
D903
Q904
1-630-066-
11
1
2
3
4
5
6
7

LD-17 BOARD

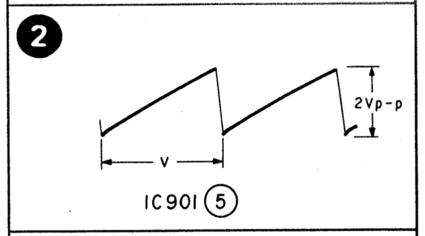


D903
D902
W905
1-630-067-
11

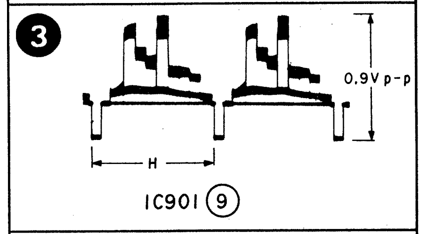
VF-22 BOARD



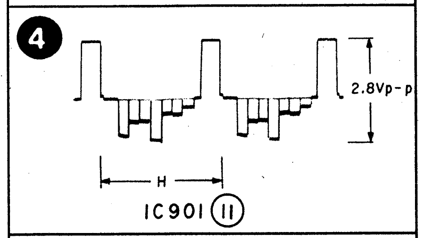
IC901 ③



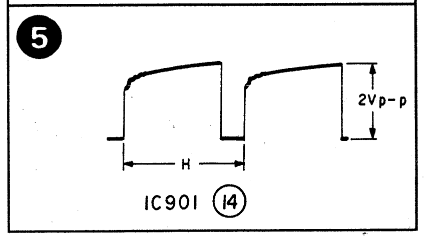
IC901 ⑤



IC901 ⑨



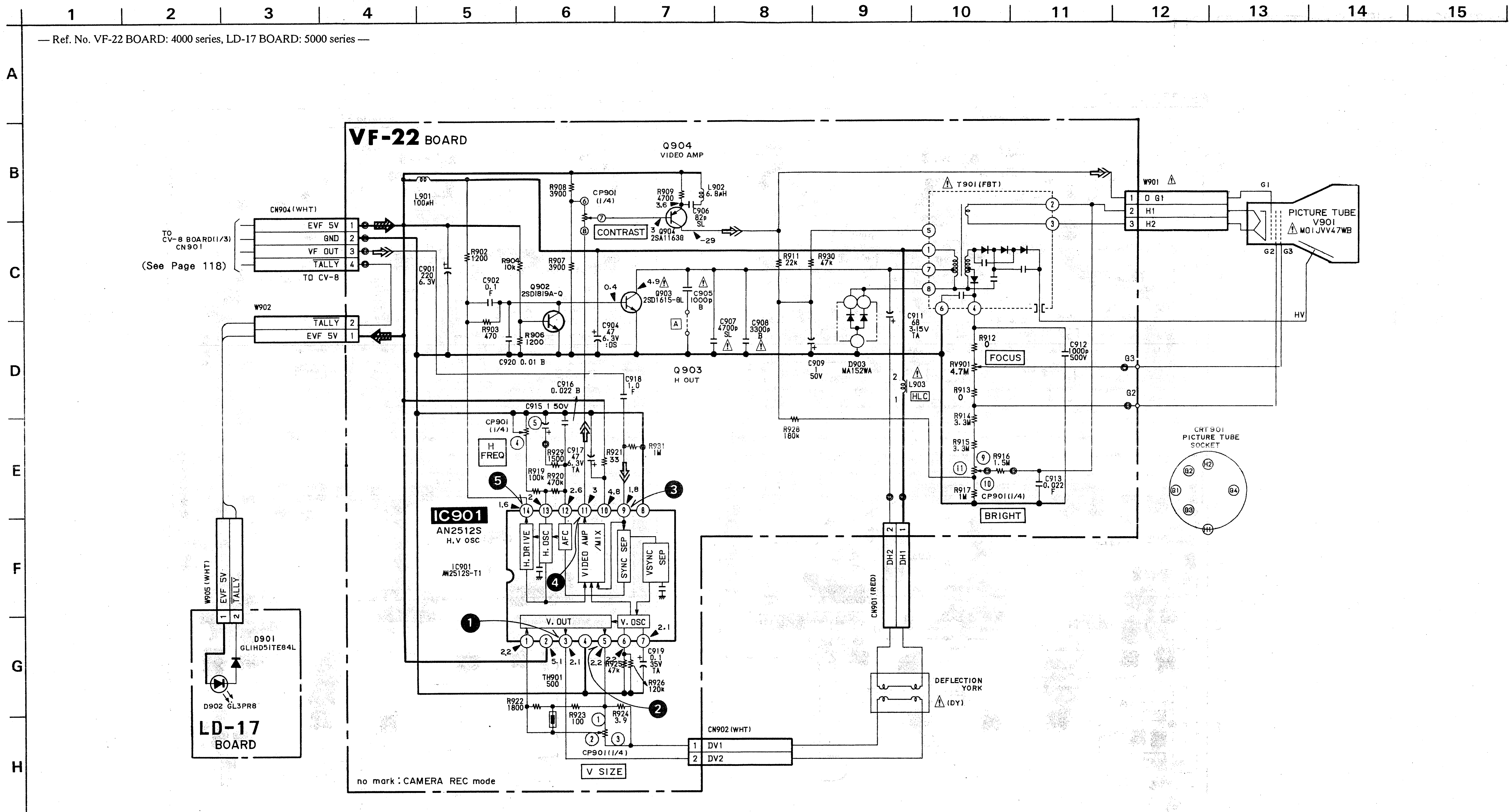
IC901 ⑪



IC901 ⑭

VF-22 (ELECTRONIC VIEW FIDER), LD-17 (TALLY LED) SCHEMATIC DIAGRAMS

— Ref. No. VF-22 BOARD: 4000 series, LD-17 BOARD: 5000 series —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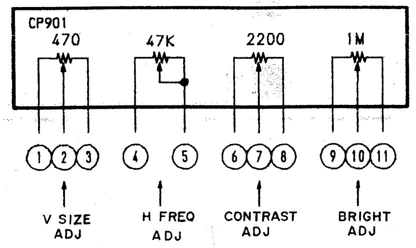
A
B
C
D
E
F
G
H
VF-22 BOARD
Q904
VIDEO AMP
CN904 (WHT)
TO CV-8 BOARD(1/3) CN901
(See Page 118)
EVF 5V
GND
VF OUT
TALLY
TO CV-8
W902
TALLY
EVF 5V
L901 100µH
R908 3900
CP901 (1/4)
CONTRAST
R909 4700
L902 6.8µH
C906 82p SL
Q904 2SA1163B
-29
R902 1200
R904 10k
R907 3900
C901 220 6.3V
C902 0.1 F
Q902 2SD1819A-Q
R903 470
R906 1200
C920 0.01 B
C904 47 6.3V :OS
Q903 2SD1615-BL
C905 1000p B
C907 4700p SL
C908 3300p B
Q903
H OUT
R911 22k
R930 47k
C909 1 50V
D903 MA152WA
C911 68 3.15V TA
T901 (FBT)
W901
0 G1
H1
H2
PICTURE TUBE
V901
M01JVV47WB
G1
G2
G3
HV
R912 0
FOCUS
C912 1000p 500V
RV901 4.7M
R913 0
R914 3.3M
R915 3.3M
R916 1.5M
C913 0.022 F
R917 1M
CP901 (1/4)
BRIGHT
L903
HLC
R928 180k
CRT901
PICTURE TUBE SOCKET
C916 0.022 B
C918 1.0 F
C915 1 50V
H FREQ
R929 1500
C917 47 6.3V TA
R921 33
R931 1M
R919 100k
R920 470k
IC901
AN2512S
H.V OSC
IC901 AN2512S-T1
H. DRIVE
H. OSC
AFC
VIDEO AMP /MIX
SYNC SEP
VSYNC SEP
V. OUT
V. OSC
TH901 500
R925 47k
C919 0.1 35V TA
R926 120k
R922 1800
R923 100
R924 3.9
CP901 (1/4)
V SIZE
CN902 (WHT)
DV1
DV2
CN901 (RED)
DH2
DH1
DEFLECTION YORK
(DY)
no mark : CAMERA REC mode
W905 (WHT)
EVF 5V
TALLY
D901 GL1HD51TE84L
D902 GL3PR8
LD-17 BOARD

CP901


CP901
470
47K
2200
1M
①②③
④
⑤
⑥⑦⑧
⑨⑩⑪
V SIZE ADJ
H FREQ ADJ
CONTRAST ADJ
BRIGHT ADJ

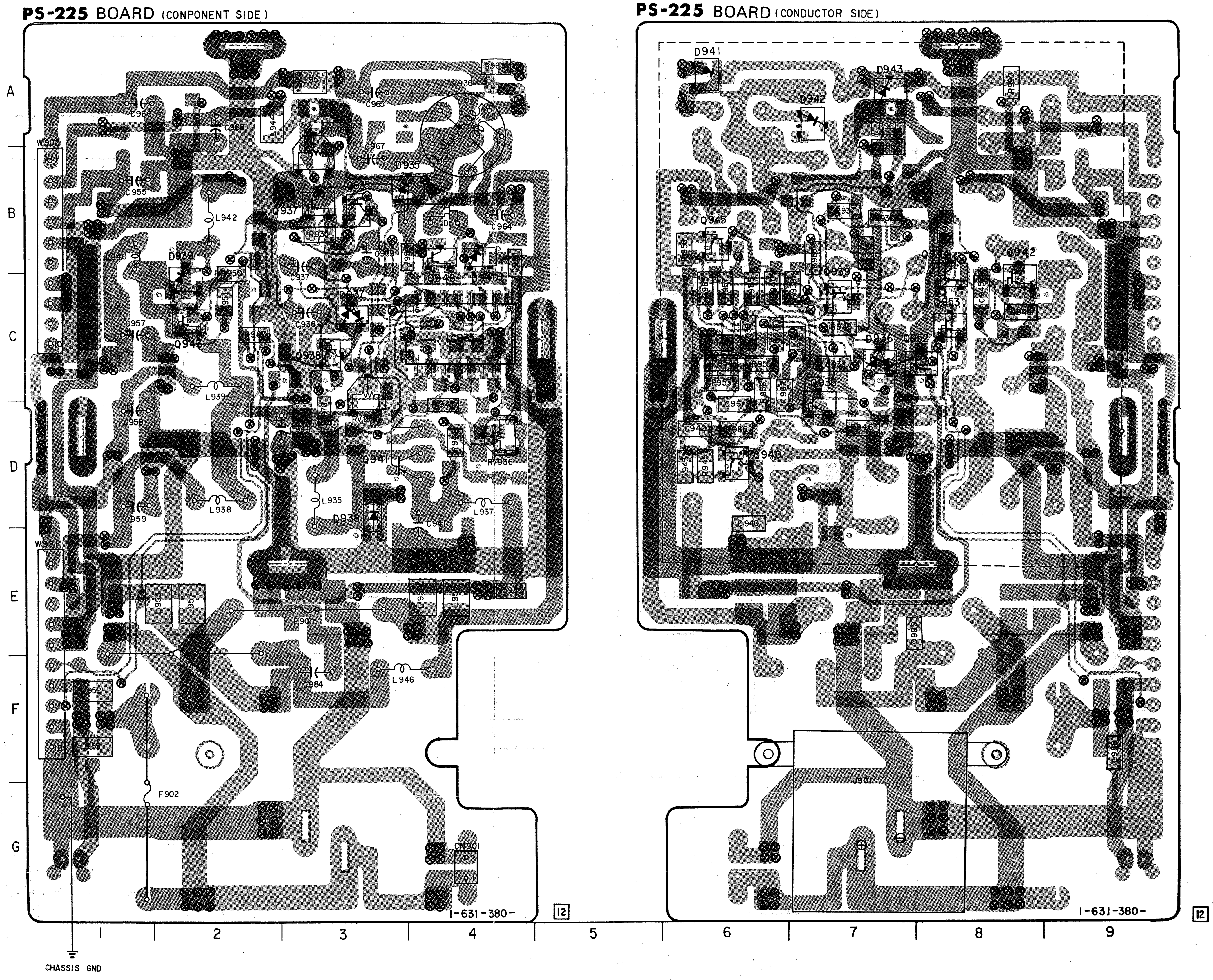
- Signal path

	VIDEO Signal			AUDIO Signal
	CHROMA	Y	Y/CHROMA	
REC				
PB		⇨		

PS-225 (POWER SUPPLY) PRINTED WIRING BOARDS

— Ref. No. PS-225 BOARD: 1000 series —

PS-225	BOARD
D935	B-4
D936	C-7
D937	C-3
D938	D-3
D939	C-2
D940	C-4
D941	A-6
D942	A-7
D943	A-7
IC935	C-4
Q935	B-3
Q936	C-7
Q937	B-3
Q938	C-3
Q939	C-7
Q940	D-6
Q941	D-4
Q942	C-8
Q943	C-2
Q944	B-8
Q945	C-6
Q946	C-4
Q947	B-4
Q952	C-8
Q953	C-8


PS-225 BOARD (CONPONENT SIDE)

PS-225 BOARD (CONDUCTOR SIDE)

A
B
C
D
E
F
G
1
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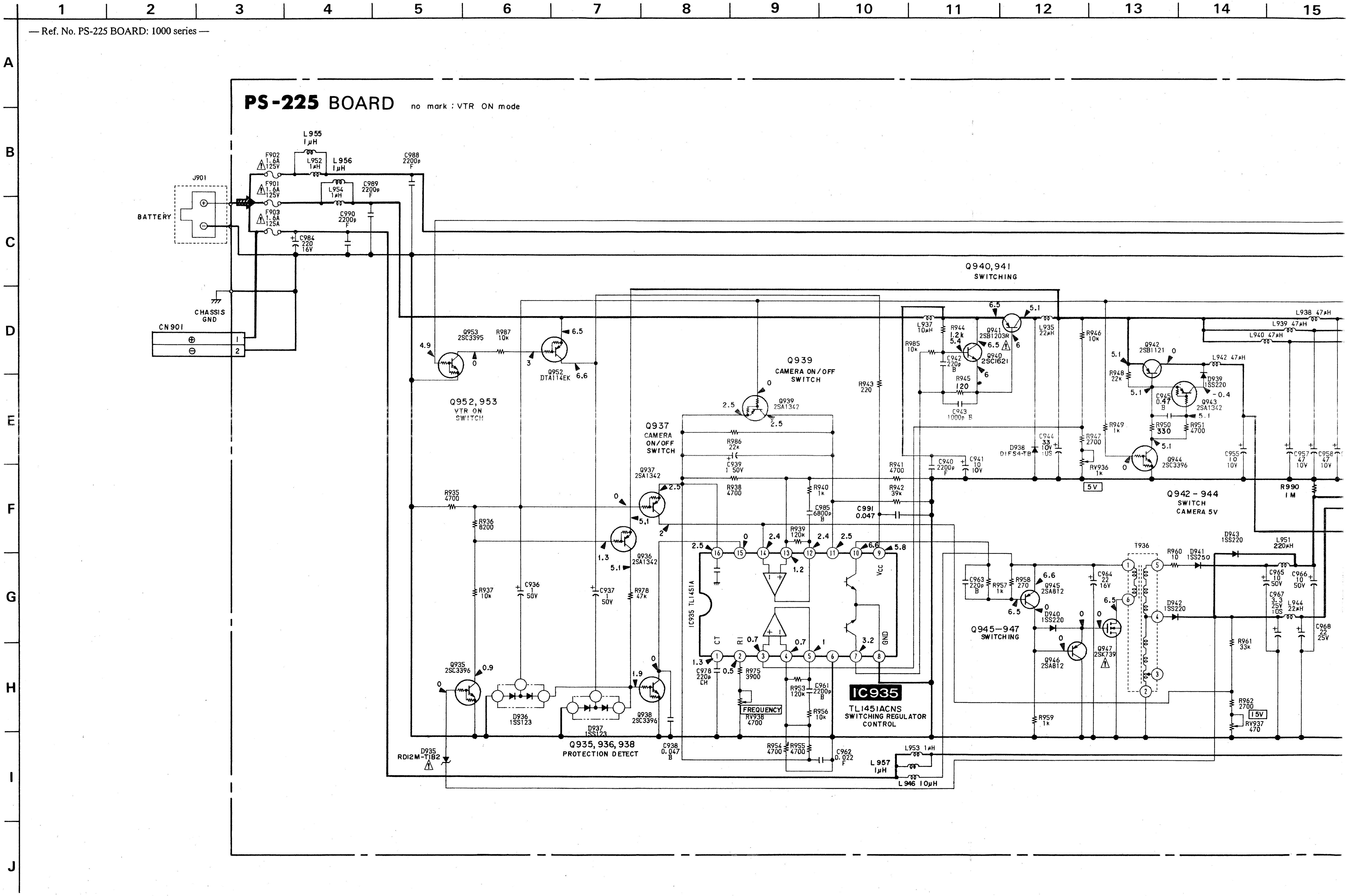
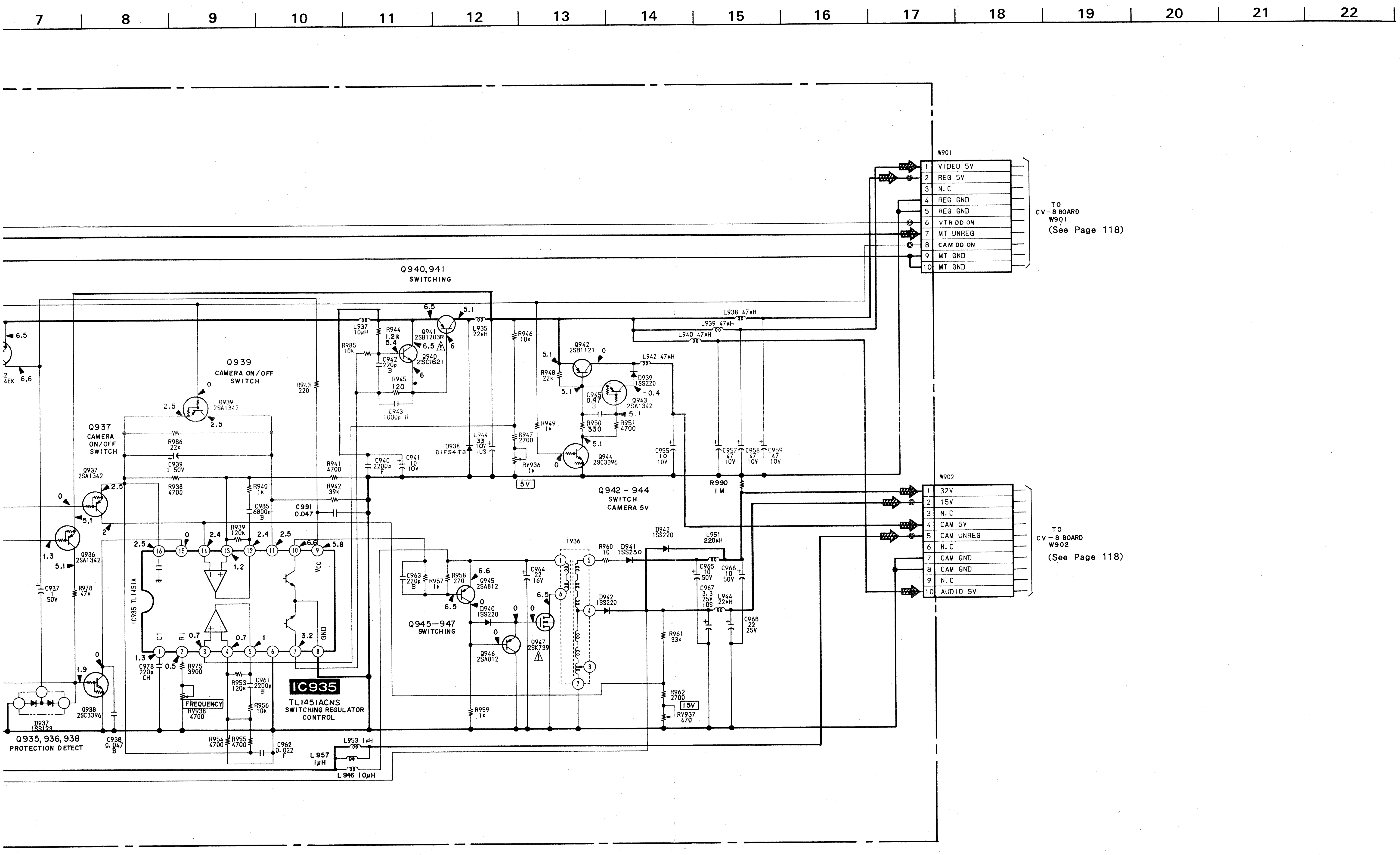
3
4
5
6
7
8
9
W902
W901
C966
C968
L944
L951
C965
T936
R980
RV937
C967
D935
C955
L942
Q937
Q935
R935
C964
C939
L940
D939
R950
C937
Q946
D946
D937
C936
C957
Q943
Q938
IC935
L939
C958
RV936
R942
Q941
R936
L935
D938
L938
C959
C941
L937
L953
L957
F901
F903
C984
L946
L952
L958
F902
CN901
1-631-380-
12
CHASSIS GND
D941
D943
D942
R990
R961
R962
R937
R936
Q945
Q939
Q944
Q942
Q953
D936
Q952
Q936
R953
R952
C962
C961
C942
R986
R945
Q940
C943
R945
C940
C990
J901
C988

— Ref. No. PS-225 BOARD: 1000 series —


PS-225 BOARD
no mark : VTR ON mode
BATTERY
J901
CHASSIS GND
CN901
F902 1.6A 125V
F901 1.6A 125V
F903 1.6A 125A
L955 1μH
L952 1μH
L956 1μH
L954 1μH
C988 2200p F
C989 2200p F
C990 2200p F
C984 220 16V
Q952,953 VTR ON SWITCH
Q953 2SC3395
R987 10k
Q952 DTA114EK
Q939 CAMERA ON/OFF SWITCH
Q939 2SA1342
Q937 CAMERA ON/OFF SWITCH
Q937 2SA1342
Q936 2SA1342
Q935 2SC3396
Q938 2SC3396
D936 1SS123
D937 1SS123
Q935, 936, 938 PROTECTION DETECT
D935 RD12M-T1B2
R935 4700
R936 8200
R937 10k
C936 1 50V
C937 1 50V
R978 47k
C938 0.047 B
R986 22k
C939 1 50V
R938 4700
R940 1k
C985 6800p B
R939 120k
C991 0.047
R943 220
R941 4700
R942 39k
IC935 TL1451A
IC935
TL1451ACNS
SWITCHING REGULATOR CONTROL
C978 220p CH
R975 3900
FREQUENCY RV938 4700
R953 120k
C961 2200p B
R956 10k
R954 4700
R955 4700
C962 0.022 F
L953 1μH
L957 1μH
L946 10μH
Q940,941 SWITCHING
Q941 2SB1203R
Q940 2SC1621
L937 10μH
R944 1.2k
R985 10k
C942 220p B
R945 120
C943 1000p B
L935 22μH
D938 D1FS4-TB
C944 33 10V :US
R946 10k
R947 2700
RV936 1k
5V
C940 2200p F
C941 10 10V
Q942 2SB1121
Q943 2SA1342
Q944 2SC3396
D939 1SS220
L942 47μH
R948 22k
C945 0.47 B
R949 1k
R950 330
R951 4700
Q942 - 944 SWITCH CAMERA 5V
L938 47μH
L939 47μH
L940 47μH
C955 10 10V
C957 47 10V
C958 47 10V
R990 1M
Q945-947 SWITCHING
C963 220p B
R957 1k
R958 270
Q945 2SA812
D940 1SS220
Q946 2SA812
Q947 2SK739
R959 1k
C964 22 16V
T936
R960 10
D941 1SS250
D942 1SS220
D943 1SS220
L951 220μH
C965 10 50V
C966 10 50V
C967 3.3 25V :US
L944 22μH
C968 22 25V
R961 33k
R962 2700
15V
RV937 470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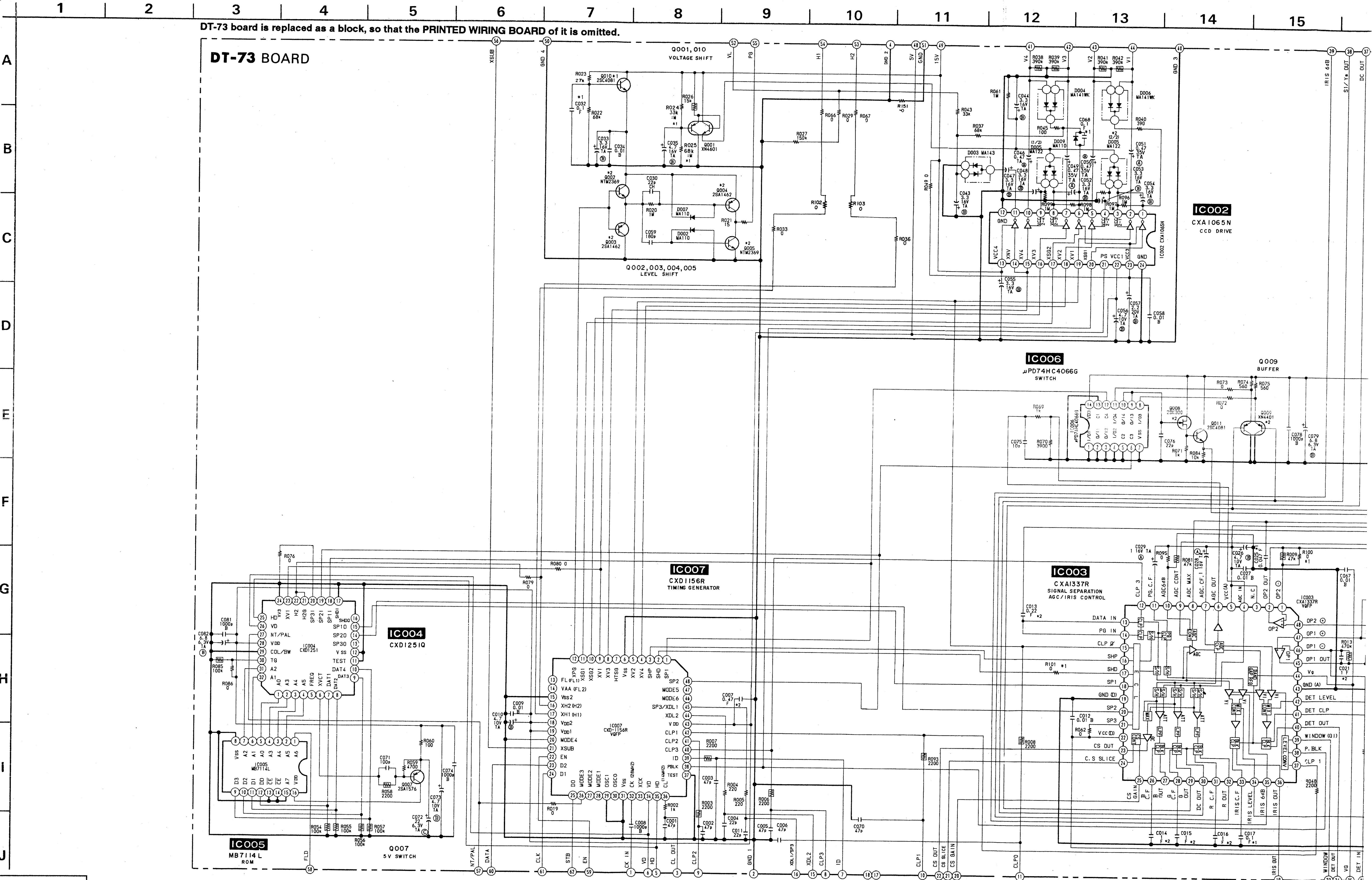
21
22
W901
1 VIDEO 5V
2 REG 5V
3 N.C
4 REG GND
5 REG GND
6 VTR DD ON
7 MT UNREG
8 CAM DD ON
9 MT GND
10 MT GND
TO CV-8 BOARD W901 (See Page 118)
W902
1 32V
2 15V
3 N.C
4 CAM 5V
5 CAM UNREG
6 N.C
7 CAM GND
8 CAM GND
9 N.C
10 AUDIO 5V
TO CV-8 BOARD W902 (See Page 118)
Q940,941 SWITCHING
Q939 CAMERA ON/OFF SWITCH
Q939 2SA1342
Q937 CAMERA ON/OFF SWITCH
Q937 2SA1342
Q936 2SA1342
Q938 2SC3396
D937 1SS123
Q935, 936, 938 PROTECTION DETECT
Q941 2SB1203R
Q940 2SC1621
L937 10μH
R944 1.2k
R985 10k
C942 220p B
R945 120
C943 1000p B
L935 22μH
R946 10k
R943 220
D938 DIFS4-TB
C944 33 10V :US
R947 2700
RV936 1k
5V
C940 2200p F
C941 10 10V
R941 4700
R942 39k
C991 0.047
Q942 2SB1121
R948 22k
C945 0.47 B
Q943 2SA1342
D939 1SS220
R950 330
R951 4700
R949 1k
Q944 2SC3396
L942 47μH
L938 47μH
L939 47μH
L940 47μH
C955 10 10V
C957 47 10V
C958 47 10V
C959 47 10V
R990 1M
Q942 - 944 SWITCH CAMERA 5V
R986 22k
C939 1 50V
R938 4700
R940 1k
C985 6800p B
R939 120k
C937 1 50V
R978 47k
IC935 TL1451A
CT
RI
Vcc
GND
C978 220p CH
R975 3900
FREQUENCY
RV938 4700
R953 120k
C961 2200p B
R956 10k
R954 4700
R955 4700
C962 0.022 F
C938 0.047 B
IC935
TL1451ACNS SWITCHING REGULATOR CONTROL
L953 1μH
L957 1μH
L946 10μH
C963 220p B
R957 1k
R958 270
Q945 2SA812
D940 1SS220
Q946 2SA812
Q947 2SK739
Q945-947 SWITCHING
R959 1k
C964 22 16V
T936
R960 10
D941 1SS250
D943 1SS220
L951 220μH
D942 1SS220
C965 10 50V
C966 10 50V
C967 3.3 25V :OS
L944 22μH
C968 22 25V
R961 33k
R962 2700
15V
RV937 470
6.5
6.6
2.5
2.4
1.2
1.3
5.1
5.4
5.8
0.7
0.5
3.2
-0.4
0

DT-73 (CCD DRIVE, TIMING GENERATOR) SCHEMATIC DIAGRAMS

DT-73 board is replaced as a block, so that the PRINTED WIRING BOARD of it is omitted.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A
B
C
D
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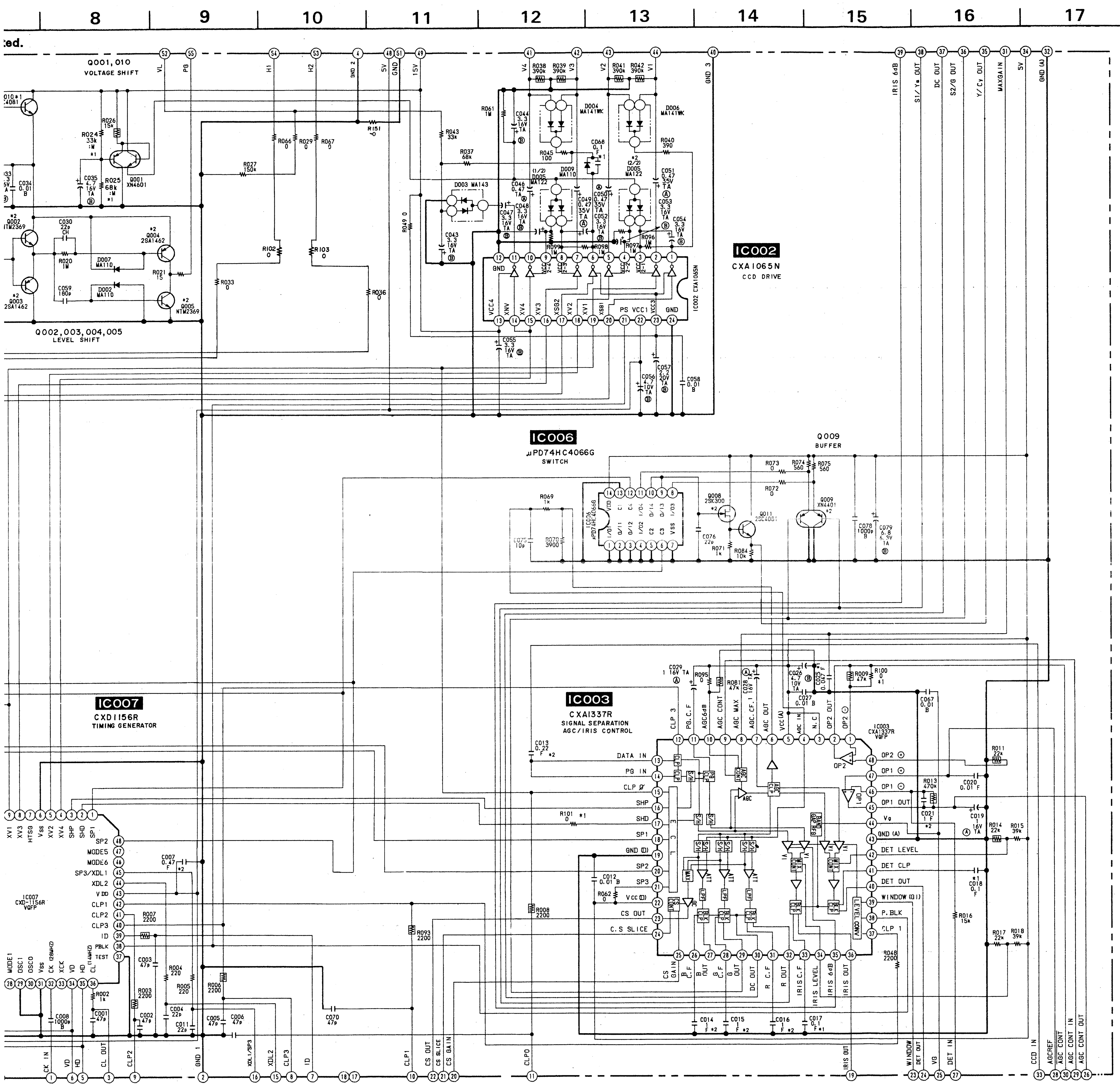
F
G
H
I
J
DT-73 BOARD
Q001, 010
VOLTAGE SHIFT
Q002,003,004,005
LEVEL SHIFT
IC002
CXA1065N
CCD DRIVE
IC006
μPD74HC4066G
SWITCH
Q009
BUFFER
IC007
CXD1156R
TIMING GENERATOR
IC003
CXA1337R
SIGNAL SEPARATION
AGC/IRIS CONTROL
IC004
CXD1251Q
IC005
MB7114L
ROM
Q007
5V SWITCH
XSUB
GND 4
VL
PG
H1
H2
GND 2
5V
GND
15V
V4
V3
V2
V1
GND 3
IRIS 6dB
SI/Ye OUT
DC OUT
FLD
NT/PAL
DATA
CLK
STB
EN
CK IN
VD
HD
CL OUT
CLP2
GND 1
XDL1/SP3
XDL2
CLP3
ID
CLP1
CS OUT
CS SLICE
CS GAIN
CLP0
IRIS OUT
WINDOW
DET OUT
VG
DET IN


8
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16
17
18
19
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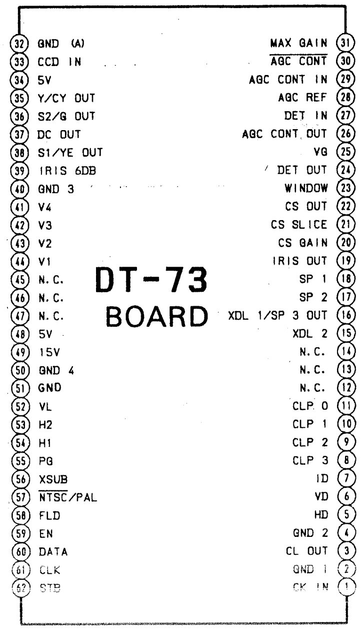
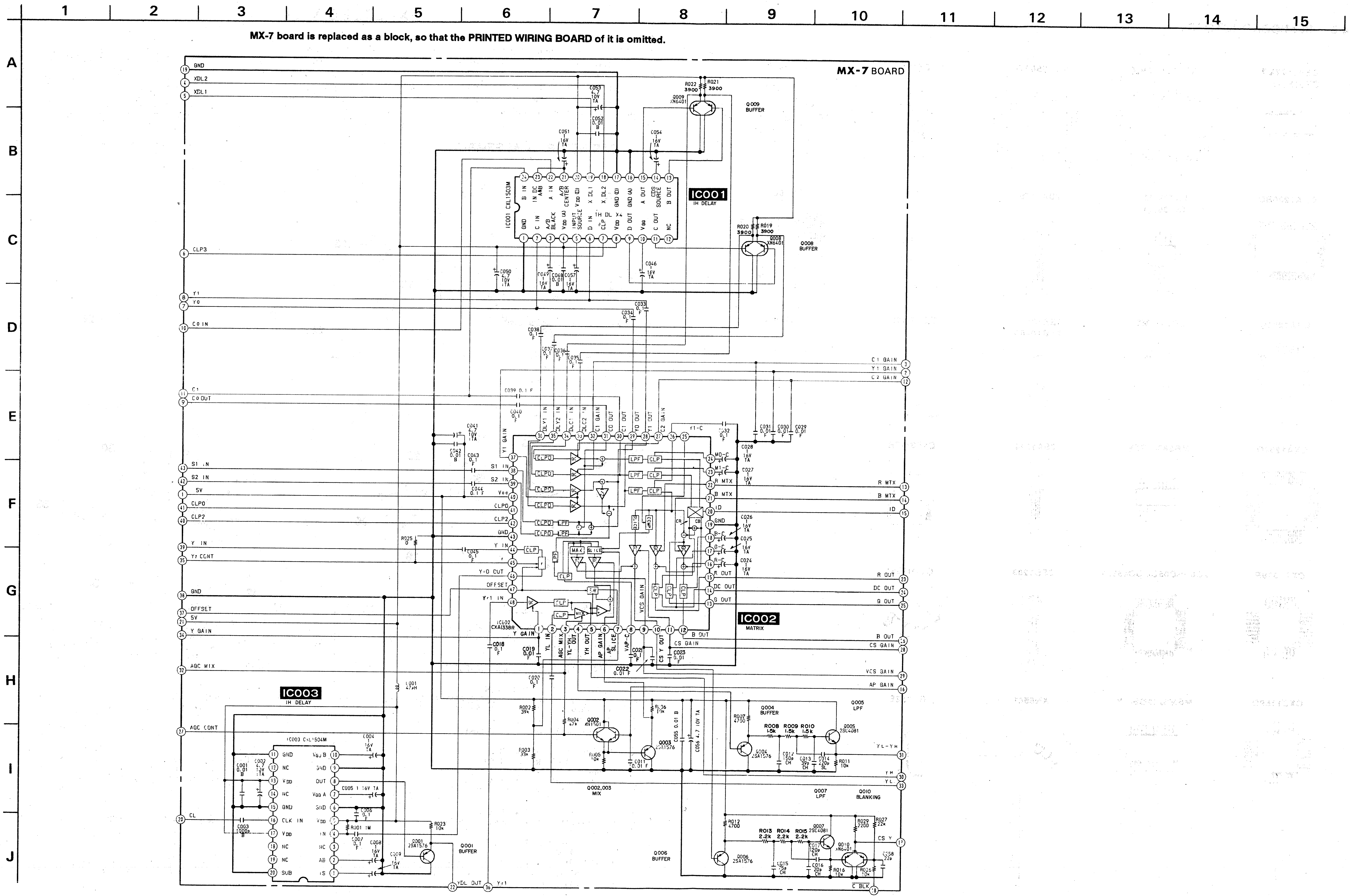
21
22
Q001, 010
VOLTAGE SHIFT
Q002, 003, 004, 005
LEVEL SHIFT
IC002
CXA1065N
CCD DRIVE
IC006
μPD74HC4066G
SWITCH
Q009
BUFFER
IC007
CXD1156R
TIMING GENERATOR
IC003
CXA1337R
SIGNAL SEPARATION
AGC/IRIS CONTROL
VL
PG
H1
H2
GND 2
5V
GND
15V
V4
V3
V2
V1
GND 3
IRIS 6dB
S1/Ye OUT
DC OUT
S2/G OUT
Y/Cy OUT
MAXGAIN
5V
GND (A)
CK IN
VD
HD
CL OUT
CLP2
GND 1
XDL1/SP3
XDL2
CLP3
ID
CLP1
CS OUT
CS SLICE
CS GAIN
CLP0
IRIS OUT
WINDOW
DET OUT
VG
DET IN
CCD IN
AGCREF
AGC CONT IN
AGC CONT OUT


DT-73
BOARD
32 GND (A)
33 CCD IN
34 5V
35 Y/CY OUT
36 S2/G OUT
37 DC OUT
38 S1/YE OUT
39 IRIS 6DB
40 GND 3
41 V4
42 V3
43 V2
44 V1
45 N.C.
46 N.C.
47 N.C.
48 5V
49 15V
50 GND 4
51 GND
52 VL
53 H2
54 H1
55 PG
56 XSUB
57 NTSC/PAL
58 FLD
59 EN
60 DATA
61 CLK
62 STB
MAX GAIN 31
AGC CONT 30
AGC CONT IN 29
AGC REF 28
DET IN 27
AGC CONT OUT 26
VG 25
DET OUT 24
WINDOW 23
CS OUT 22
CS SLICE 21
CS GAIN 20
IRIS OUT 19
SP 1 18
SP 2 17
XDL 1/SP 3 OUT 16
XDL 2 15
N.C. 14
N.C. 13
N.C. 12
CLP 0 11
CLP 1 10
CLP 2 9
CLP 3 8
ID 7
VD 6
HD 5
GND 2 4
CL OUT 3
GND 1 2
CK IN 1

CAMERA CAMERA

MX-7 (CAMERA SIGNAL MATRIX) SCHEMATIC DIAGRAMS

MX-7 board is replaced as a block, so that the PRINTED WIRING BOARD of it is omitted.


1
2
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12
13
14
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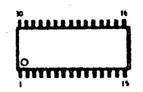
A
B
C
D
E
F
G
H
I
J
MX-7 BOARD
GND
XDL2
XDL1
CLP3
Y1
Y0
C0 IN
C1
C0 OUT
S1 IN
S2 IN
5V
CLP0
CLP2
Y IN
Yr CONT
GND
OFFSET
5V
Y GAIN
AGC MIX
AGC CONT
CL
YDL OUT
Yr1
C1 GAIN
Y1 GAIN
C2 GAIN
R MTX
B MTX
ID
R OUT
DC OUT
G OUT
B OUT
CS GAIN
VCS GAIN
AP GAIN
YL-YH
YH
YL
CS Y
C BLK
IC001
IH DELAY
IC001 CXL1503M
B IN
IN DC A&B
A IN
A/B CENTER
VDD (D)
X DL1
X DL2
GND (D)
GND (A)
A OUT
CDS SOURCE
B OUT
GND
C IN
A/B BLACK
VDD (A)
INPUT SOURCE
D IN
1H DL X4
CLP
VDD
D OUT
VBB
C OUT
NC
Q009 XN6401
Q009 BUFFER
Q008 XN6401
Q008 BUFFER
R022 3900
R021 3900
R020 3900
R019 3900
C053 4.7 10V TA
C052 0.01 B
C051 1 16V TA
C054 1 16V TA
C050 4.7 10V TA
C049 1 16V TA
C048 0.01 B
C057 1 16V TA
C046 1 16V TA
C033 0.1 F
C034 0.1 F
C038 0.1 F
C037 0.1 F
C036
C035 0.1 F
C039 0.1 F
C040 0.1 F
C041 4.7 10V TA
C042 0.01 B
C043 0.1 F
C044 0.1 F
C045 0.1 F
R025 0
IC002
MATRIX
IC002 CXA1338R
DLY1 IN
DLY2 IN
DLC1 IN
DLC2 IN
C1 GAIN
C0 OUT
C1 OUT
Y0 OUT
Y1 OUT
C2 GAIN
Y1 GAIN
S1 IN
S2 IN
Vcc
CLP0
CLP2
GND
Y IN
r
Y+D CUT
OFFSET
Yr1 IN
Y GAIN
YL IN
AGC MIX
YL-YH OUT
YH OUT
AP GAIN
AP SLICE
VAP-C
VCS GAIN
CS Y OUT
B OUT
CS GAIN
M0-C
M1-C
R MTX
B MTX
ID
GND
B-C
G-C
R-C
R OUT
DC OUT
G OUT
f1-C
C032 0.1 F
C031 0.01 F
C030 0.01 F
C029 0.01 F
C028 1 16V TA
C027 1 16V TA
C026 1 16V TA
C025 1 16V TA
C024 1 16V TA
CLPD
LPF
CLP
MAX
BLK LE
MIX
SW
CR
CB
C018 0.1 F
C019 0.01 F
C020 0.1 F
C021 0.1 F
C022 0.01 F
C023 0.01 F
R002 39k
R003 33k
R004 47k
R005 10k
R006 10k
Q002 XN1501
Q003 2SA1576
Q002,003 MIX
C011 0.01 F
C055 0.01 B
C056 4.7 10V TA
Q004 BUFFER
Q004 2SA1576
R007 4700
R008 1.5k
R009 1.5k
R010 1.5k
Q005 2SC4081
Q005 LPF
C012 150p CH
C013 39p CH
C014 220p SL
R011 10k
Q007 LPF
Q010 BLANKING
R012 4700
R013 2.2k
R014 2.2k
R015 2.2k
Q007 2SC4081
Q010 XN6401
R029 7200
R027 22k
C017 120p CH
C015 75p CH
C016 20p CH
R016 10k
R026 10k
C058 22p
Q006 BUFFER
Q006 2SA1576
L001 47μH
IC003
IH DELAY
IC003 CXL1504M
GND
NC
VDD
NC
GND
CLK IN
VDD
NC
NC
SUB
VGG B
GND
OUT
VGG A
GND
VDD
IN
NC
AB
IS
C001 0.01 B
C002 4.7 10V TA
C003 1000p B
C004 1 16V TA
C005 1 16V TA
C006 0.1 F
C007 0.1 F
C008 1 16V TA
C009 1 16V TA
R001 1M
R023 10k
Q001 2SA1576
Q001 BUFFER

4-3. SEMICONDUCTORS

CXA1127MT
CXL1501M



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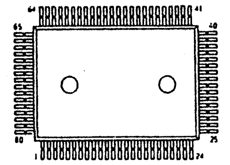

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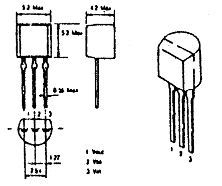

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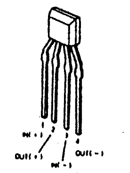
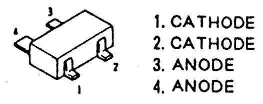
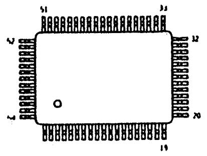


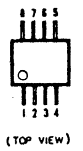
DWA010



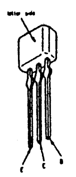
CXA1200BQ



LA7293M
TK10500M



2SA1175



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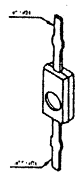
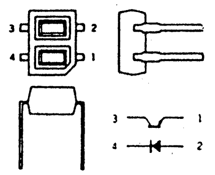


TLP907



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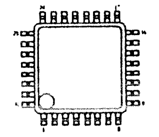
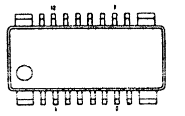


LB1631MT



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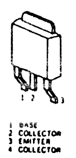
2SB1040A



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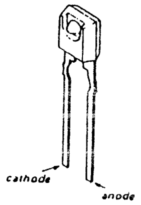
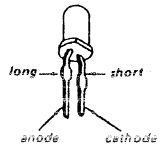


GL3PR8



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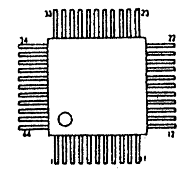

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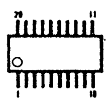

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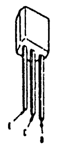
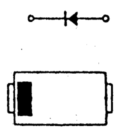


D1FS4-TB



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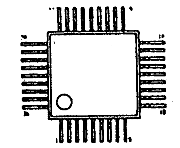

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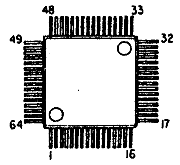
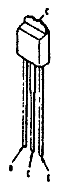
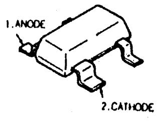


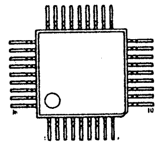
2SB1203



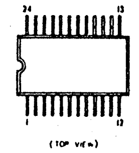
GL-1HD51



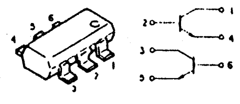
CXD1159Q



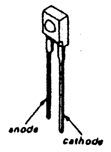
MSM6219GS-VK



XN6501



GL452S



SECTION 5
EXPLODED VIEWS

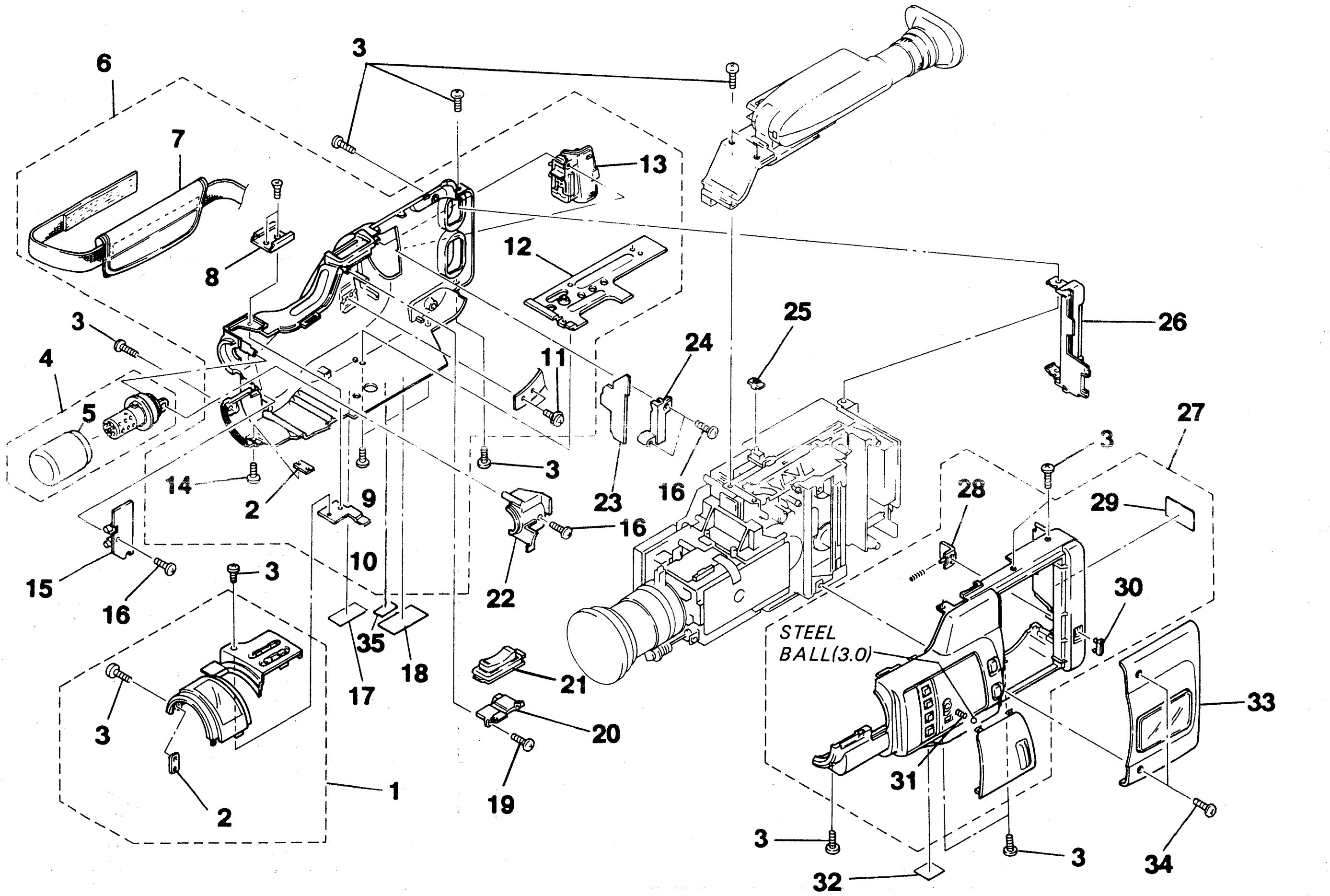
NOTE:

- −XX, −X mean standardized parts, so they may have some differences from the original one.
- The construction parts of an assembled part are indicated with a collation number in the remark column.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

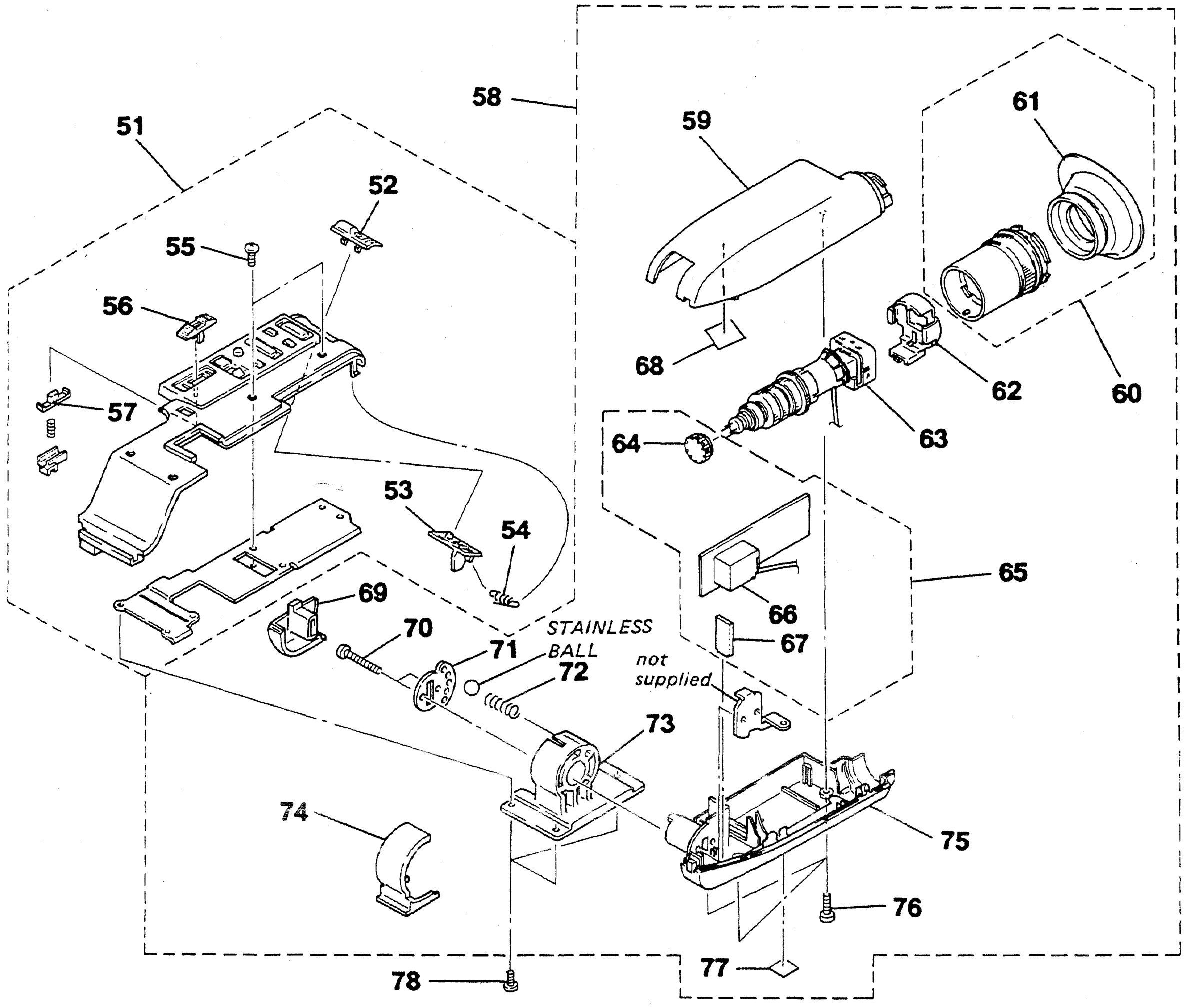
Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

5-1. CABINET (R, L) ASSEMBLY



No.	Part No.	Description	Remark
1	X-3733-924-1	CABINET (FRONT) ASSY (CCD-F45/F360)	1-3
	X-3733-946-1	CABINET (FRONT) ASSY (CCD-F46)	1-3
2	3-732-912-01	JOINT, L/R	
3	3-719-381-01	SCREW (M2X4)	
4	1-542-125-21	MICROPHONE (C-2027)	5
5	3-707-650-11	SCREEN, WIND	
6	X-3733-923-1	CABINET (LEFT) ASSY (CCD-F45/F360)	2,7-14
	X-3733-944-1	CABINET (LEFT) ASSY (CCD-F46)	2,7-14
7	3-719-323-01	BELT, GRIP	
8	3-724-511-01	SHOE, ACCESSORY	
9	3-719-381-31	SCREW (M2X3)	
10	3-737-723-01	RETAINER SHOE	
11	3-669-480-21	+ PTPWH 2	
12	*3-732-911-01	SHEET METAL, TRIPOD	
13	X-3732-953-1	KNOB ASSY, SP	
14	3-719-831-21	SCREW (M2X4)	
15	*A-7061-741-A	MA-37 BOARD, COMPLETE	
16	3-713-790-31	SCREW (M2X8), TAPPING, P3	
17	*3-704-367-01	LABEL (US MODEL (CCD-F45/F46))	
18	*3-737-746-01	LABEL, MODEL NUMBER (U) (CCD-F45)	
	*3-737-791-01	LABEL, MODEL NUMBER (U) (CCD-F46)	
	*3-741-513-01	LABEL, MODEL NUMBER (E) (CCD-F360)	
	*3-746-817-01	LABEL, MODEL NUMBER (E) (CCD-F360 Venezuelan Model)	
19	3-713-790-01	SCREW (M2X6), TAPPING, P3	
20	*3-732-937-01	RETAINER, ZOOM BUTTON	
21	1-571-837-11	SWITCH, PUSH (ZOOM SW) (S901)	
22	3-737-737-01	HOUSING, MICROPHONE	
23	*1-631-831-11	RC-29 BOARD	
24	*3-732-928-01	STOPPER, RC	
25	3-732-926-01	BUTTON, EDIT	
26	3-732-924-01	BLIND, L/R (CCD-F45/F360)	
	3-732-924-31	BLIND, L/R (CCD-F46)	
27	X-3733-926-1	CABINET (RIGHT) ASSY (CCD-F45/F360)	28-31
27	X-3733-949-1	CABINET (RIGHT) ASSY (CCD-F46)	28-31
28	3-732-906-01	LOCK, BATTERY	
29	*3-719-683-01	LABEL, BATTERY FITTING	
30	3-732-905-01	BUTTON, BATTERY RELEASE (CCD-F45/F360)	
	3-732-905-21	BUTTON, BATTERY RELEASE (CCD-F46)	
31	3-576-098-00	SPRING, COMPRESSION	
32	*3-704-256-01	LABEL, CAUTION (US MODEL (CCD-F45/F46))	
33	X-3733-927-1	LID ASSY, CASSETTE (CCD-F45)	
	X-3733-947-1	LID ASSY, CASSETTE (CCD-F46)	
	X-3733-994-1	LID ASSY, CASSETTE (CCD-F360)	
34	3-733-912-01	SCREW (M2X2.5), SPECIAL HEAD	
35	3-703-845-01	LABEL (N)(U/C), MAIN CAUTION (CCD-F45/F46)	

5-2. CABINET (UPPER), EVF ASSEMBLY (TYPE A)

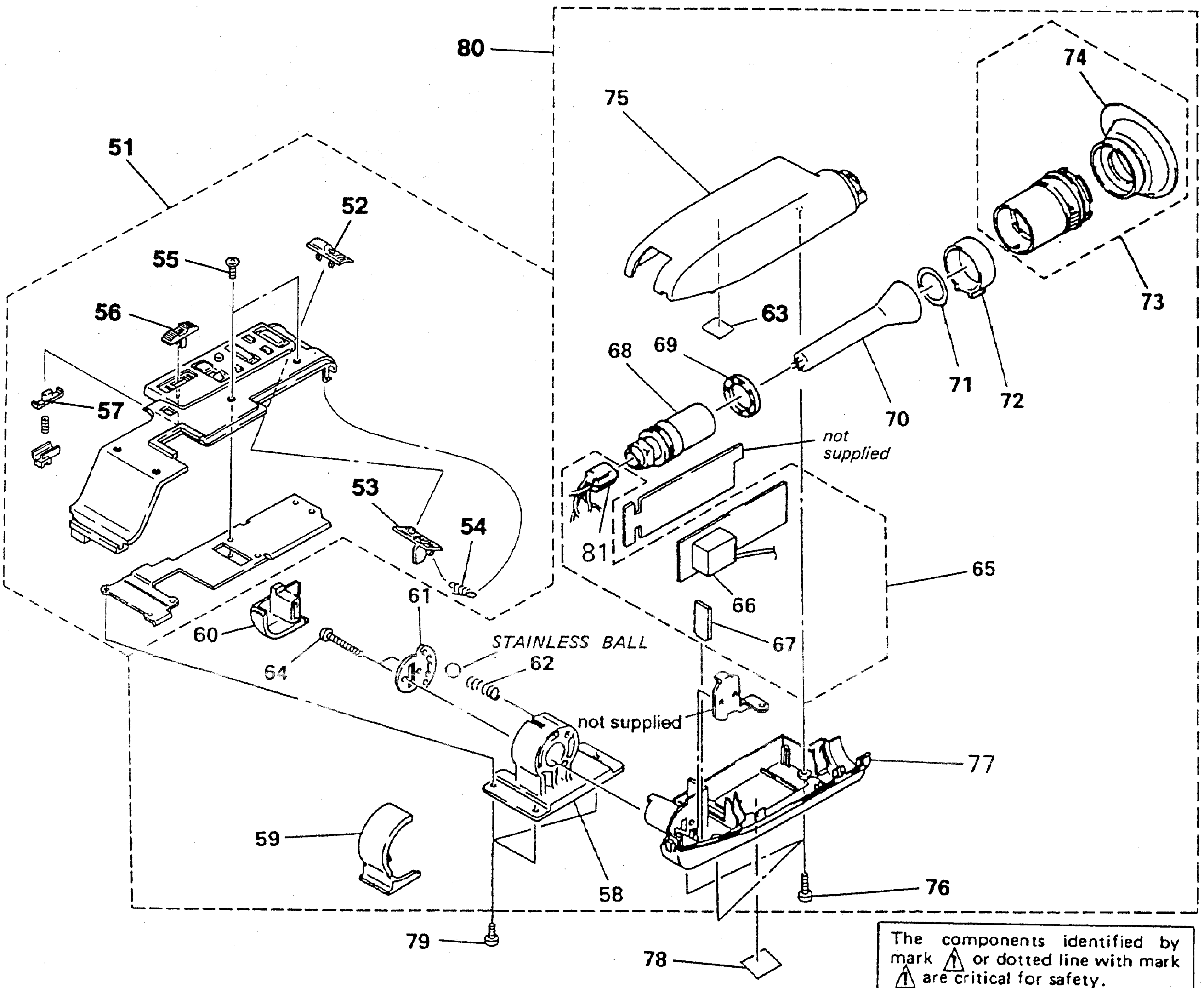


The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifé.

No.	Part No.	Description	Remark
51	X-3733-925-1	CABINET (UPPER) ASSY (CCD-F45/F360)	52-57
	X-3733-945-1	CABINET (UPPER) ASSY (CCD-F46)	52-57
52	3-732-919-01	BUTTON, EJECT (CCD-F45/F360)	
	*3-732-919-11	BUTTON, EJECT (CCD-F46)	
53	3-732-920-01	LOCK, EJECT	
54	3-669-440-00	SPRING, TENSION	
55	3-719-381-01	SCREW (M2X4)	
56	3-718-226-01	BUTTON, POWER	
57	*3-718-257-11	BUTTON, PUSH, POWER	
58	A-7019-142-A	EVF COMPLETE ASSY	59-77
59	3-732-948-01	CABINET (UPPER), EVF	
60	A-7080-715-A	HOLDER BLOCK ASSY, FINDER	61
61	3-733-922-01	EYE CUP	
62	X-3732-910-1	HOLDER ASSY, CRT	
63	⚠.1-452-482-11	CRT ASSY (M91JYZ60WB) (VF-14 BOARD)	
64	⚠ 1-540-019-21	SOCKET ASSY, CRT (W901)	
65	*A-7061-560-A	VF-14 BOARD, COMPLETE	64, 66, 67
66	⚠.1-439-431-11	TRANSFORMER ASSY, FRYBACK (T901)	
67	*1-629-384-11	LD-13 BOARD	
68	3-704-233-01	LABEL, CAUTION, HIGH VOLTAGE	
69	3-732-949-01	BLIND, EVF CABINET (LOWER)	
70	3-732-987-01	SCREW (M2X20), +P	
71	3-732-947-01	PLATE, LOCK	
72	3-732-946-01	SPRING, COMPRESSION	
73	*3-732-944-01	BEARING, EVF	
74	3-732-950-01	BLIND, EVF	
75	X-3732-911-1	CABINET (LOWER) ASSY, EVF	
76	3-713-790-31	SCREW (M2X8), TAPPING, P3	
77	*3-703-848-01	LABEL (N), SUB CAUTION	
78	3-732-988-01	SCREW (M2X2.5)	

5-3. CABINET (UPPER), EVF ASSEMBLY (TYPE B)



The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

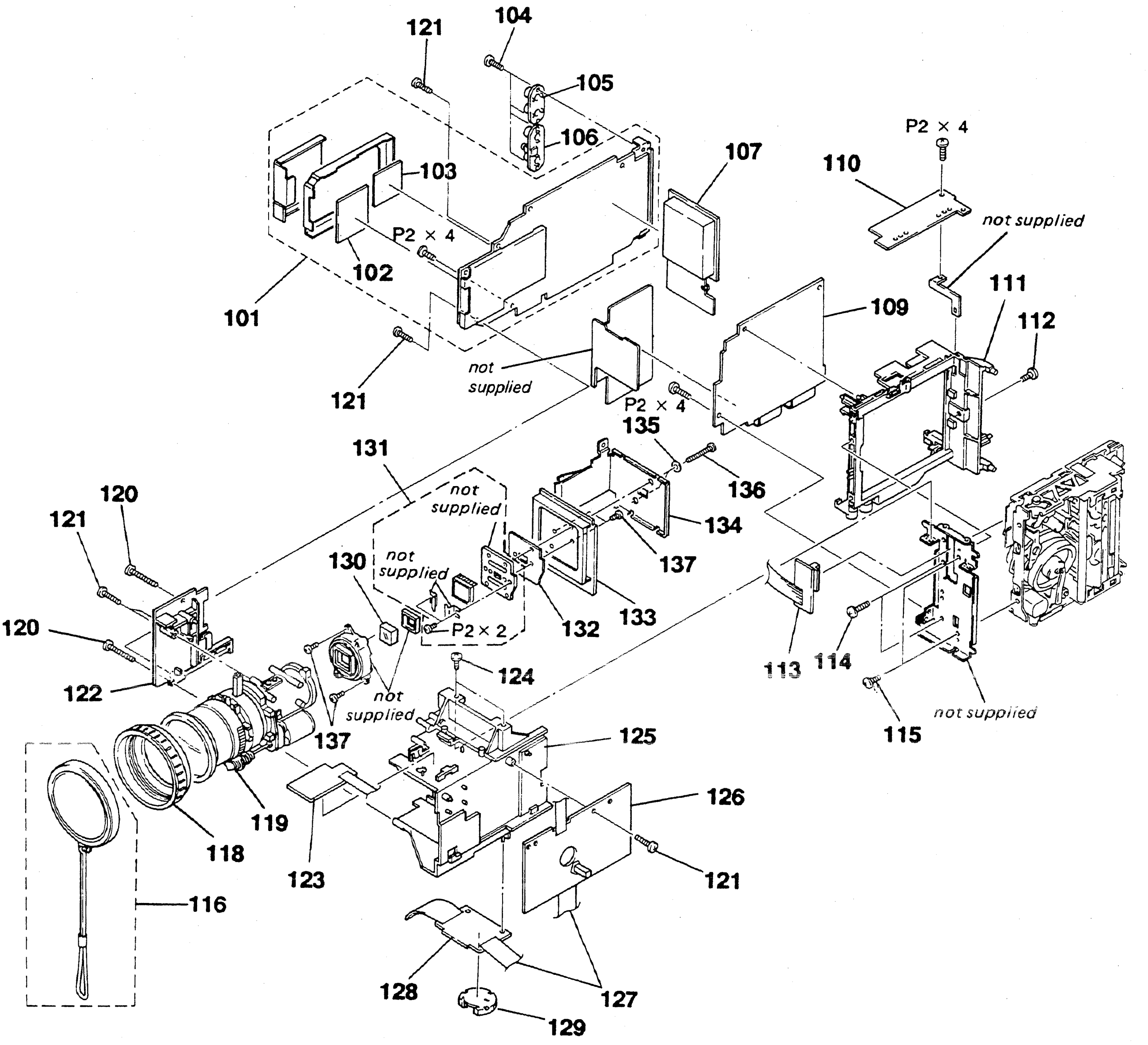
Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

No.	Part No.	Description	Remark
51	X-3733-925-1	CABINET (UPPER) ASSY (CCD-F45/F360)	52-57
	X-3733-945-1	CABINET (UPPER) ASSY (CCD-F46)	52-57
52	3-732-919-01	BUTTON, EJECT (CCD-F45/F360)	
	*3-732-919-11	BUTTON, EJECT (CCD-F46)	
53	3-732-920-01	LOCK, EJECT	
54	3-669-440-00	SPRING, TENSION	
55	3-719-381-01	SCREW (M2X4)	
56	3-718-226-01	BUTTON, POWER	
57	*3-718-257-11	BUTTON, PUSH, POWER	
58	*3-732-944-01	BEARING, EVF	
59	3-732-950-01	BLIND, EVF	
60	3-732-949-01	BLIND, EVF CABINET (LOWER)	
61	3-732-947-01	PLATE, LOCK	
62	3-732-946-01	SPRING, COMPRESSION	
63	3-704-233-01	LABEL, CAUTION, HIGH VOLTAGE	
64	3-732-987-01	SCREW (M2X20), +P	

No.	Part No.	Description	Remark
65	*A-7061-558-A	VF-22 BOARD, COMPLETE	66, 67, 81
66	⚠.1-439-428-11	TRANSFORMER ASSY, FLYBACK (T901)	
67	*1-630-067-11	LD-17 BOARD	
68	⚠ 1-451-310-21	DEFLECTION YOKE (B/W)	
69	3-724-549-01	LOCK, CRT	
70	⚠.1-546-065-11	CATHODE-RAY TUBE, B/W	
71	3-724-570-01	RING, CRT FIXED	
72	X-3724-509-1	HOLDER ASSY, CRT	
73	A-7080-715-A	HOLDER BLOCK ASSY, FINDER	74
74	3-733-922-01	EYE CUP	
75	3-732-948-01	CABINET (UPPER), EVF	
76	3-713-790-31	SCREW (M2X8), TAPPING, P3	
77	X-3732-911-1	CABINET (LOWER) ASSY, EVF	
78	*3-703-848-01	LABEL (N), SUB CAUTION	
79	3-732-988-01	SCREW (M2X2.5)	
80	A-7019-142-A	EVF COMPLETE ASSY	58-78, 81
81	⚠ 1-526-978-21	SOCKET ASSY, CRT (CRT901)	

5-4. MAIN BOARD ASSEMBLY

Be sure to read "Precautions for Replacement of CCD Imager" on page 87 when changing the CCD imager.


121
104
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P2 × 4
not supplied
P2 × 4
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not supplied
P2 × 4
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not supplied
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not supplied
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P2 × 2
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not supplied
not supplied
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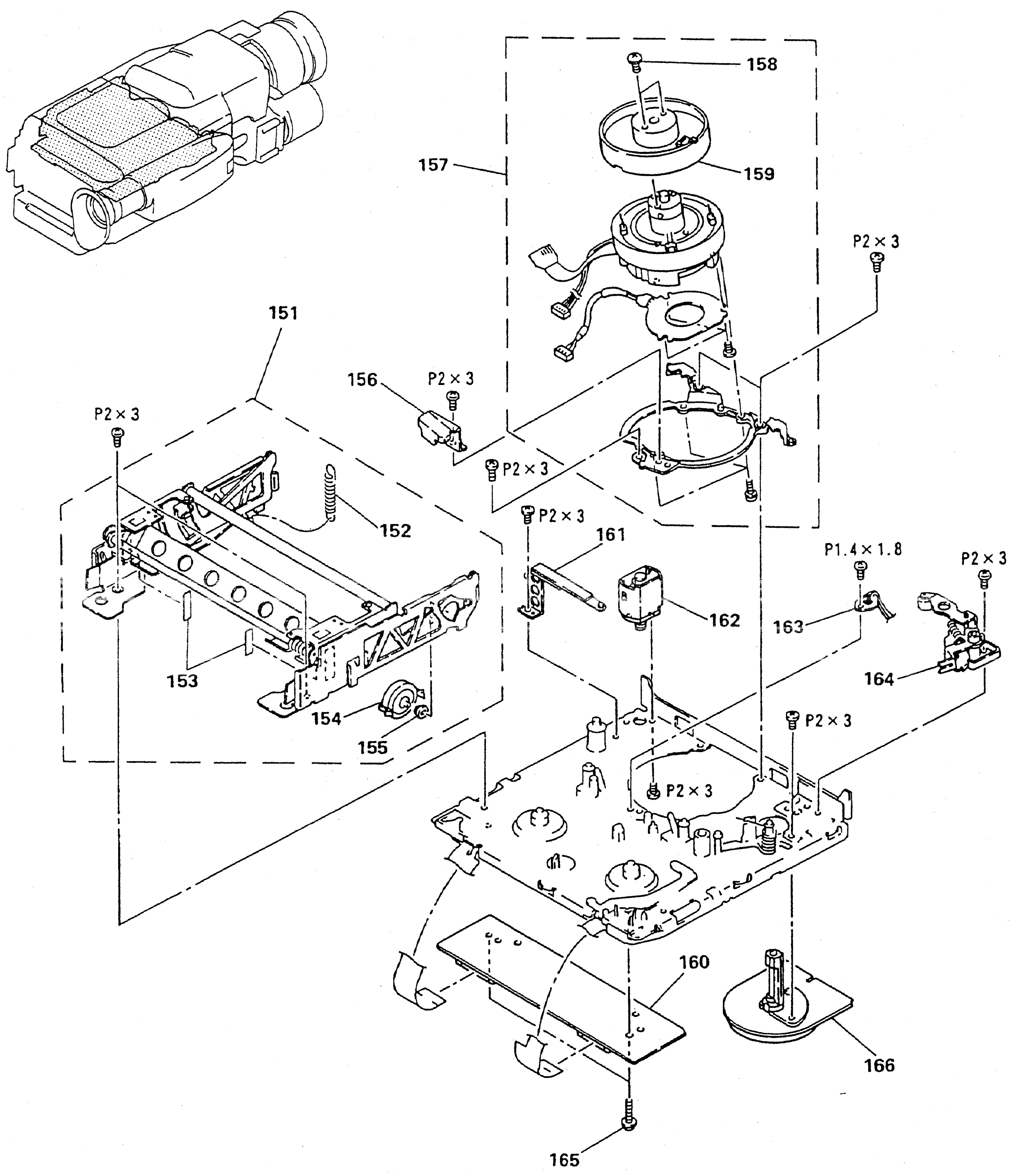
No.	Part No.	Description	Remark
101	*A-7061-832-A	CV-8 BOARD, COMPLETE	102-103
102	A-7068-150-A	DT-73A BOARD, COMPLETE (HIC)	
103	A-7068-128-A	MX-7 BOARD, COMPLETE (HIC)	
104	3-719-695-01	SCREW (M1.7X3.5), SPECIAL HEAD	
105	1-568-409-11	JACK, PIN 2P	
106	1-537-142-11	TERMINAL BOARD	
107	*A-7061-745-A	PS-225 BOARD, COMPLETE	
109	*A-7061-380-A	CO-2 BOARD, COMPLETE	
110	*1-631-828-11	VK-3 BOARD	
111	*3-732-932-01	HOLDER, MD	
112	3-732-791-01	SCREW (M2X3)	
113	*1-631-827-11	KS-6 BOARD	
114	3-713-790-01	SCREW (M2X5), TAPPING, P3	
115	3-732-816-01	SCREW, STEP	
116	A-7090-806-A	CAP ASSY, HOOD	
118	3-728-269-01	HOOD	
119	1-547-380-11	LENS, ZOOM (VCL-8508XB)	
120	3-713-790-31	SCREW (M2X8), TAPPING, P3	
121	3-713-790-01	SCREW (M2X6), TAPPING, P3	
122	3-737-744-01	HOLDER (B), LENS	
123	*1-631-825-11	DK-4 BOARD	
124	3-719-381-01	SCREW (M2X4)	
125	X-3733-928-1	HOLDER ASSY, LENS	
126	*A-7061-739-A	CK-19 BOARD, COMPLETE	
127	1-575-064-11	CABLE, FLAT (1.0MM PITCH) 18P	
128	*1-629-372-12	LI-5 BOARD	
129	1-550-104-32	HOLDER, BATTERY	
130	A-7090-879-A	FILTER KIT,OPTICAL (OFB-02-02)	
131	A-7030-124-A	IC ICX026BK-2 ASSY (CCD IMAGER)	
132	*3-725-180-01	SHEET, INSULATING, CCD HOLDER	
133	*A-7061-738-A	CD-17 BOARD, COMPLETE	
134	*X-3733-929-1	SHIELD (CD), ASSY, CAMERA	
135	3-303-961-11	WASHER, POLY	
136	3-732-981-01	SCREW (M2X18)	
137	3-738-519-01	SCREW (M2x3)	

5-5. MD BLOCK ASSEMBLY (1)


158
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P2 × 3
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P2 × 3
P2 × 3
P2 × 3
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P2 × 3
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P1.4 × 1.8
P2 × 3
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P2 × 3
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P2 × 3
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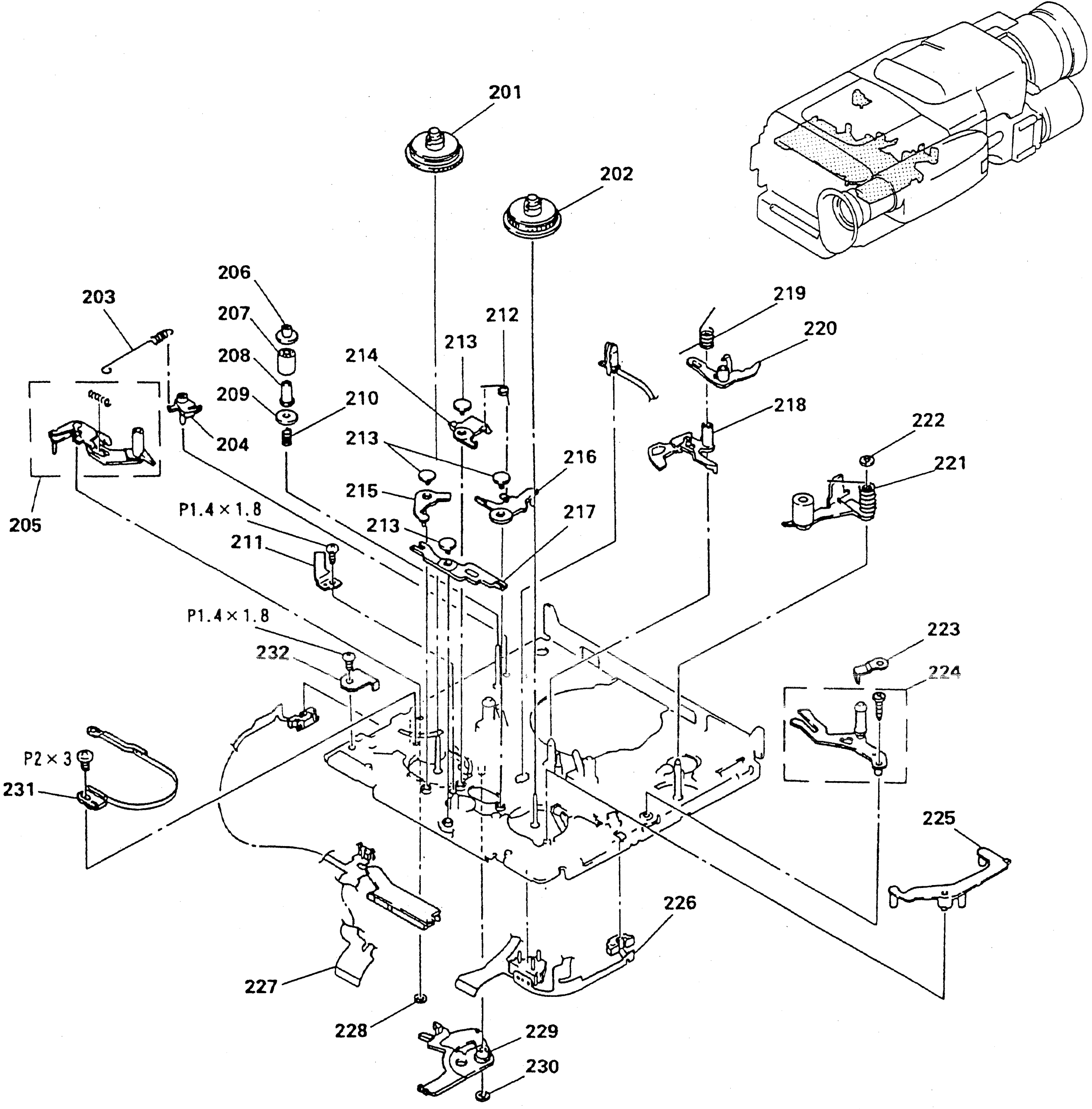
No.	Part No.	Description	Remark
151	X-3726-892-1	CASSETTE COMPARTMENT ASSY (N)	152-155
152	3-728-825-03	SPRING, TENSION	
153	*3-728-829-01	TAPE	
154	3-728-867-11	DAMPER, OIL	
155	3-728-828-02	GEAR, DAMPER	
156	3-728-868-01	GUARD, GUIDE	
157	A-7048-189-A	DRUM ASSY (DGU-26A-R)	158, 159
158	3-686-403-01	SCREW (M2X5), P1	
159	A-7049-174-A	DRUM ASSY, UPPER, ROTARY (DGR-26R)	
160	*A-7061-744-A	CC-26 BOARD, COMPLETE	
161	1-535-739-12	TERMINAL, SHAFT EARTH	
162	A-7040-160-A	MOTOR ASSY, THREADING (M903)	
163	1-808-505-11	SENSOR (DEW)	
164	A-7040-161-B	ROLLER BLOCK ASSY, HC	
165	3-713-790-01	SCREW (M2X6), TAPPING, P3	
166	8-835-331-01	MOTOR, DC U-22A (CAPSTAN) (M902)	

5-6. MD BLOCK ASSEMBLY (2)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P1.4 × 1.8
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P1.4 × 1.8
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P2 × 3
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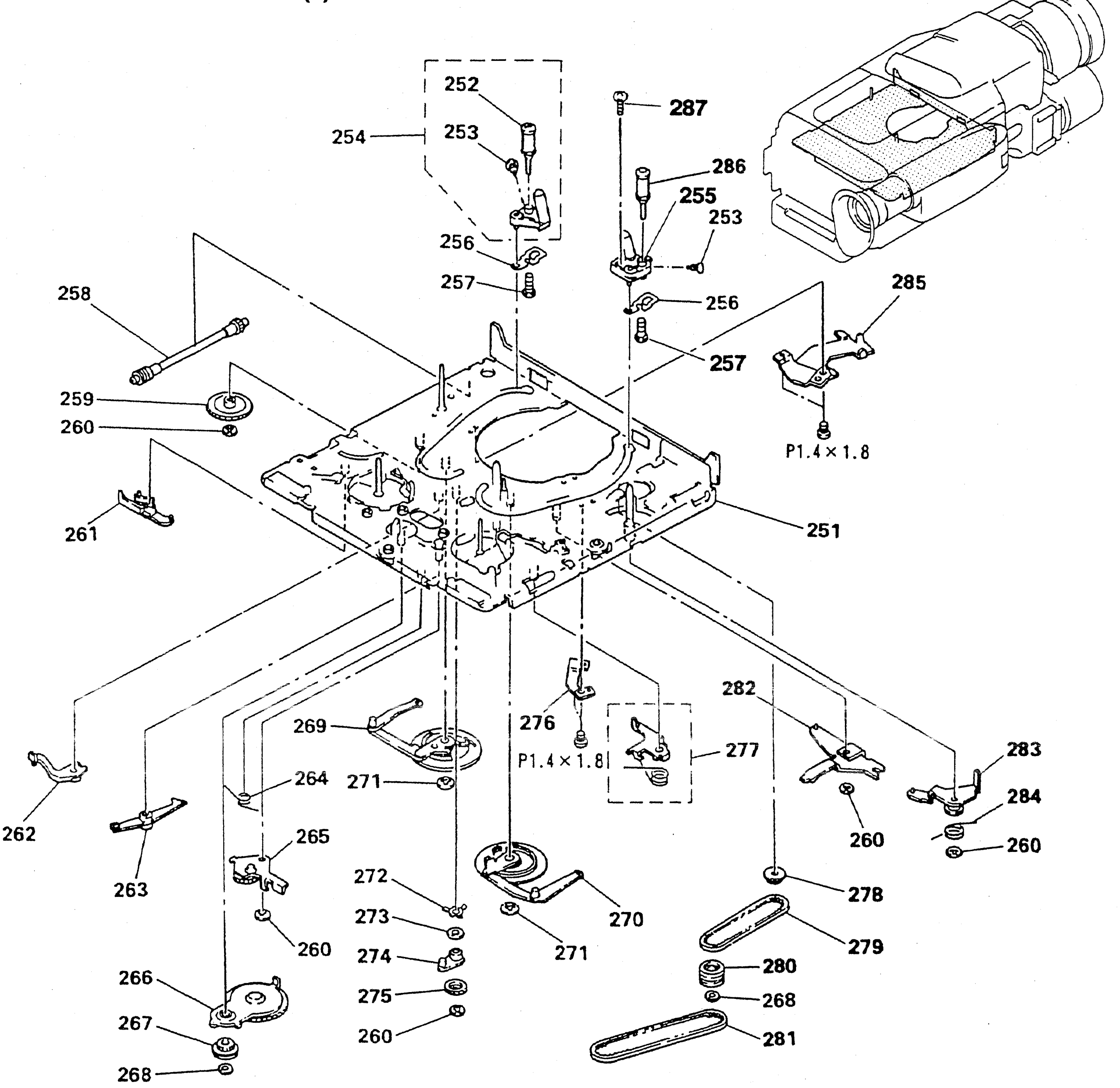
No.	Part No.	Description	Remark
201	X-3726-821-2	TABLE ASSY, REEL, S	
202	X-3726-825-4	TABLE ASSY, REEL, T	
203	3-736-414-01	SPRING, TENSION	
204	3-728-855-03	ARM, ADJUSTMENT	
205	X-3726-886-1	ARM ASSY (N)TENSION REGULATOR	
206	3-726-884-01	FLANGE, UPPER, TG2	
207	3-726-883-01	ROLLER, TG2	
208	3-726-885-01	SLEEVE, TG2	
209	3-726-882-02	FLANGE, LOWER, TG2	
210	3-726-886-01	SPRING, COMPRESSION	
211	3-726-848-01	RETAINER, TL	
212	3-726-866-01	SPRING (ST), TORSION	
213	3-726-858-01	PIN, SHAFT RETAINER	
214	3-728-849-01	BRAKE, S	
215	3-726-852-01	BRAKE, LB	
216	3-728-850-01	BRAKE, T	
217	3-726-853-01	LEVER, LB	
218	3-728-875-01	STOPPER, RK	
219	3-726-864-01	SPRING (RK), TORSION	
220	3-728-852-02	ARM, RK STOPPER	
221	A-7040-163-B	ARM BLOCK ASSY, PINCH	
222	3-669-465-00	WASHER (1.5), STOPPER	
223	3-728-808-01	SPRING, LEAF	
224	X-3726-822-1	ARM ASSY, TG7	
225	3-728-848-01	ARM, LB RELEASE	
226	1-628-061-12	FP-90 FLEXIBLE BOARD	
227	1-628-060-12	FP-89 FLEXIBLE BOARD	
228	3-321-393-11	WASHER, STOPPER	
229	X-3726-806-2	LEVER ASSY, SW	
230	3-726-829-01	WASHER, STOPPER	
231	X-3726-809-1	BAND ASSY, TENSION REGULATOR	
232	3-730-125-01	RETAINER, SW	

5-7. MD BLOCK ASSEMBLY (3)



252
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P1.4 × 1.8
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P1.4 × 1.8
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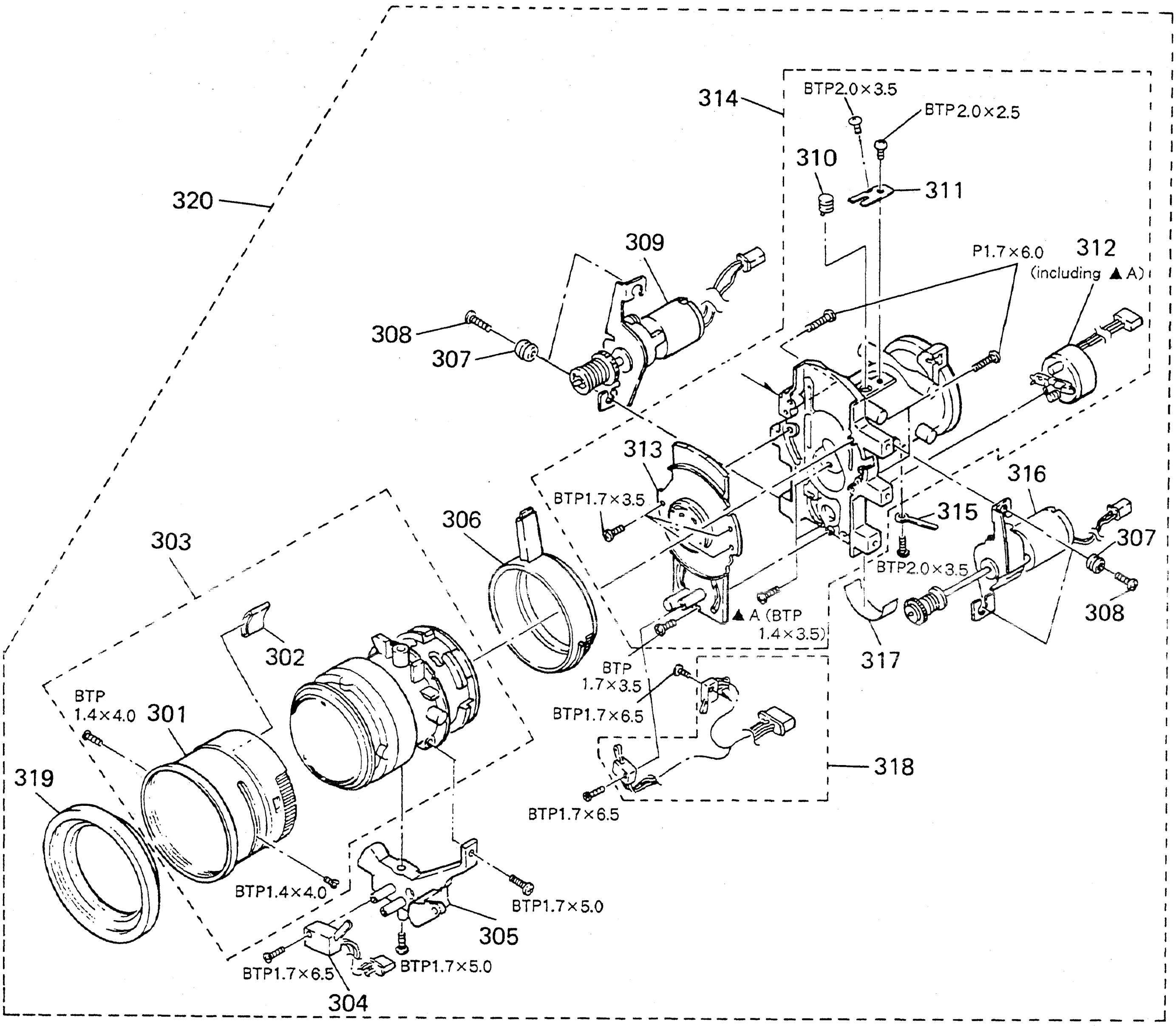
No.	Part No.	Description	Remark
251	X-3726-834-4	CHASSIS ASSY, MECHANICAL	
252	X-3726-820-1	ROLLER ASSY (U), GUIDE	
253	3-726-822-01	SCREW (M1.4X2) (STEP), HEAD	
254	A-7040-128-A	COASTER (LEFT) RLOCK ASSY	252, 253
255	X-3728-811-1	COASTER (RIGHT) ASSY	
256	3-726-820-02	SPRING, LEAF	
257	3-726-830-01	SCREW (M1.4X4) (THREE LOCK)	
258	X-3726-807-1	WORM ASSY	
259	3-726-826-01	GEAR, WHEEL	
260	3-726-829-01	WASHER, STOPPER	
261	3-728-842-01	LEVER, EJECT	
262	3-728-851-01	BRAKE, UL	
263	3-726-854-01	ARM, BRAKE RELEASE	
264	3-726-865-01	SPRING (LB), TORSION	
265	A-7040-130-A	GEAR BLOCK ASSY, LB	
266	X-3726-802-2	GEAR ASSY, RK	
267	X-3726-812-1	GEAR ASSY, RC	
268	3-321-393-11	WASHER, STOPPER	
269	X-3726-830-2	GEAR (LEFT) ASSY, DRIVE	
270	X-3726-831-2	GEAR (RIGHT) ASSY, DRIVE	
271	3-669-465-00	WASHER (1.5), STOPPER	
272	3-726-867-01	SPRING, LEAF	
273	3-701-436-21	WASHER, POLYEHTHYLENE	
274	3-726-857-02	ARM, UL	
275	3-726-856-02	GEAR, UL	
276	*3-726-805-01	REINFORCEMENT (TT)	
277	X-3726-808-2	BRAKE ASSY, TS	
278	X-3726-805-1	GEAR ASSY, JOINT	
279	3-728-866-11	BELT (S), TIMING	
280	X-3726-838-1	PULLEY (UPPER) ASSY, MIDWAY	
281	3-728-865-11	BELT (L), TIMING	
282	X-3726-804-1	LEVER ASSY, THREADING	
283	X-3726-824-1	ARM ASSY, PINCH SUB	
284	3-726-895-01	SPRING	
285	X-3726-841-1	REINFORCEMENT (SS) ASSY	
286	X-3728-810-1	POLLER ASSY (U) (PLATING),GUIDE	
287	3-736-473-01	SCREW (2x6.5)(SLIT)(LONG LOCK)	

5-8. LENS BLOCK


314
BTP2.0×3.5
BTP2.0×2.5
310
311
320
309
P1.7×6.0
312
(including ▲A)
308
307
313
BTP1.7×3.5
316
306
315
307
303
BTP2.0×3.5
▲A (BTP 1.4×3.5)
308
302
317
BTP 1.7×3.5
BTP1.7×6.5
BTP 1.4×4.0
301
318
319
BTP1.7×6.5
BTP1.4×4.0
BTP1.7×5.0
305
BTP1.7×6.5
BTP1.7×5.0
304

No.	Part No.	Description	Remark
301	3-707-812-01	RING (F)	
302	3-707-801-01	RUBBER, STOPPER (F)	
303	3-707-808-01	TUBE ASSY	301, 302
304	3-707-805-01	SWITCH ASSY, AF	
305	3-707-806-01	BRACKET	
306	3-707-811-01	RING ASSY, ZOOM	
307	3-707-795-01	RUBBER, VIBRATION PROOF	
308	3-707-796-01	SCREW, FITTING (M)	
309	3-707-802-01	MOTOR ASSY, PZ GEAR	
310	3-707-797-01	PIN	
311	3-707-798-01	CLAMP, PIN	
312	3-707-810-01	METER, IRIS	
313	3-707-809-01	FRAME ASSY, LENS	
314	3-707-807-01	TUBE ASSY, REAR	310-313
315	3-707-799-01	PLATE, LUG	
316	3-707-803-01	MOTOR ASSY, AF GEAR	
317	3-707-800-01	TAPE	
318	3-707-804-01	PZ SWITCH ASSY	
319	3-707-568-01	ADAPTOR, LENS HOOD	
320	1-547-380-11	LENS, ZOOM (VCL-8508XB)	301-319

SECTION 6
ELECTRICAL PARTS LIST

CO-2

NOTE:

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifé.

When indicating parts by reference number, please include the board name.

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- –XX, –X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
  All resistors are in ohms
  METAL : Metal-film resistor
  METAL OXIDE : Metal Oxide-film resistor
  F : nonflammable
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS
  In each case, U : μ, for example:
  UA...: μA..., UPA...: μPA...,
  UPB...: μPB..., UPC...: μPC...,
  UPD...: μPD...
- CAPACITORS
  MF : μF, PF : μμF
- COILS
  MMH : mH, UH : μH

Ref.No	Part No.	Description			Remark
	*A-7061-380-A	CO-2 BOARD, COMPLETE (Ref.No 6,000 Series) *********************			
		CAPACITOR			
C101	1-164-247-11	CERAMIC CHIP	0.047MF	10%	16V
C102	1-164-247-11	CERAMIC CHIP	0.047MF	10%	16V
C103	1-164-247-11	CERAMIC CHIP	0.047MF	10%	16V
C104	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C105	1-163-109-00	CERAMIC CHIP	47PF	5%	50V
C106	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V
C108	1-163-123-00	CERAMIC CHIP	180PF	5%	50V
C109	1-164-161-11	CERAMIC CHIP	0.0022MF	10%	50V
C110	1-124-778-00	ELECT CHIP	22MF	20%	6.3V
C111	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V
C112	1-164-247-11	CERAMIC CHIP	0.047MF	10%	16V
C113	1-164-004-11	CERAMIC CHIP	0.1MF	10%	25V
C114	1-164-004-11	CERAMIC CHIP	0.1MF	10%	25V
C115	1-164-004-11	CERAMIC CHIP	0.1MF	10%	25V
C116	1-164-004-11	CERAMIC CHIP	0.1MF	10%	25V
C117	1-164-247-11	CERAMIC CHIP	0.047MF	10%	16V
C118	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V
C119	1-124-778-00	ELECT CHIP	22MF	20%	6.3V
C123	1-164-247-11	CERAMIC CHIP	0.047MF	10%	16V
C124	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V
C125	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V
C126	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V
C131	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C132	1-163-121-00	CERAMIC CHIP	150PF	5%	50V
C133	1-163-115-00	CERAMIC CHIP	82PF	5%	50V
C134	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C135	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C136	1-164-247-11	CERAMIC CHIP	0.047MF	10%	16V
C138	1-164-247-11	CERAMIC CHIP	0.047MF	10%	16V
C139	1-164-247-11	CERAMIC CHIP	0.047MF	10%	16V
C140	1-164-247-11	CERAMIC CHIP	0.047MF	10%	16V
C141	1-163-009-11	CERAMIC CHIP	0.001MF	10%	50V
C145	1-124-778-00	ELECT CHIP	22MF	20%	6.3V
C148	1-163-007-11	CERAMIC CHIP	680PF	10%	50V
C149	1-164-247-11	CERAMIC CHIP	0.047MF	10%	16V
C160	1-124-778-00	ELECT CHIP	22MF	20%	6.3V
C161	1-126-204-11	ELECT CHIP	47MF	20%	16V
C162	1-163-133-00	CERAMIC CHIP	470PF	5%	50V
C163	1-164-247-11	CERAMIC CHIP	0.047MF	10%	16V
C165	1-124-778-00	ELECT CHIP	22MF	20%	6.3V
C166	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C401	1-126-195-11	ELECT CHIP	2.2MF	20%	50V
C403	1-126-206-11	ELECT CHIP	100MF	20%	6.3V
C404	1-126-206-11	ELECT CHIP	100MF	20%	6.3V
C405	1-126-198-11	ELECT CHIP	4.7MF	20%	35V
C406	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V
C407	1-163-009-11	CERAMIC CHIP	0.001MF	10%	50V
C408	1-162-638-11	CERAMIC CHIP	1MF		16V
C409	1-126-206-11	ELECT CHIP	100MF	20%	6.3V
C410	1-126-207-11	ELECT CHIP	33MF	20%	4V
C411	1-126-207-11	ELECT CHIP	33MF	20%	4V
C412	1-162-638-11	CERAMIC CHIP	1MF		16V
C413	1-162-638-11	CERAMIC CHIP	1MF		16V
C414	1-126-205-11	ELECT CHIP	47MF	20%	6.3V
C415	1-163-017-00	CERAMIC CHIP	0.0047MF	10%	50V
C416	1-163-019-00	CERAMIC CHIP	0.0068MF	10%	50V
C417	1-163-017-00	CERAMIC CHIP	0.0047MF	10%	50V
C418	1-126-206-11	ELECT CHIP	100MF	20%	6.3V
C420	1-162-638-11	CERAMIC CHIP	1MF		16V
C421	1-163-009-11	CERAMIC CHIP	0.001MF	10%	50V
C501	1-124-779-00	ELECT CHIP	10MF	20%	16V
C503	1-163-095-00	CERAMIC CHIP	12PF	5%	50V
C504	1-163-095-00	CERAMIC CHIP	12PF	5%	50V
C505	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C506	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C507	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C508	1-124-779-00	ELECT CHIP	10MF	20%	16V
C509	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C510	1-124-779-00	ELECT CHIP	10MF	20%	16V
C511	1-124-779-00	ELECT CHIP	10MF	20%	16V
C512	1-126-204-11	ELECT CHIP	47MF	20%	16V
C513	1-164-247-11	CERAMIC CHIP	0.047MF	10%	16V
C514	1-136-718-11	FILM CHIP	0.1MF	5%	25V
C515	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V
C516	1-124-779-00	ELECT CHIP	10MF	20%	16V
C517	1-124-779-00	ELECT CHIP	10MF	20%	16V
C518	1-126-195-11	ELECT CHIP	2.2MF	20%	50V
C519	1-124-779-00	ELECT CHIP	10MF	20%	16V
C520	1-124-779-00	ELECT CHIP	10MF	20%	16V
C521	1-126-193-11	ELECT CHIP	1MF	20%	50V
C522	1-126-193-11	ELECT CHIP	1MF	20%	50V
C523	1-124-779-00	ELECT CHIP	10MF	20%	16V
C524	1-126-193-11	ELECT CHIP	1MF	20%	50V
C525	1-124-779-00	ELECT CHIP	10MF	20%	16V
C526	1-126-204-11	ELECT CHIP	47MF	20%	16V
C527	1-127-539-11	ELECT(SOLID)	1MF	20%	25V
C528	1-126-196-11	ELECT CHIP	3.3MF	20%	50V
C529	1-124-779-00	ELECT CHIP	10MF	20%	16V
C530	1-163-077-00	CERAMIC CHIP	0.1MF	10%	25V
C531	1-163-077-00	CERAMIC CHIP	0.1MF	10%	25V
C532	1-163-077-00	CERAMIC CHIP	0.1MF	10%	25V
C533	1-124-779-00	ELECT CHIP	10MF	20%	16V
C534	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C535	1-124-779-00	ELECT CHIP	10MF	20%	16V
C536	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C537	1-163-009-11	CERAMIC CHIP	0.001MF	10%	50V
C538	1-163-009-11	CERAMIC CHIP	0.001MF	10%	50V
C539	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V
C540	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V
C541	1-163-105-00	CERAMIC CHIP	33PF	5%	50V
C542	1-163-105-00	CERAMIC CHIP	33PF	5%	50V
C543	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V

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Ref.No	Part No.	Description		Remark
C544	1-162-638-11	CERAMIC CHIP 1MF		16V
C545	1-162-638-11	CERAMIC CHIP 1MF		16V
C546	1-164-232-11	CERAMIC CHIP 0.01MF	10%	50V
C548	1-163-035-00	CERAMIC CHIP 0.047MF		50V
C549	1-163-081-00	CERAMIC CHIP 0.22MF		25V
C550	1-164-161-11	CERAMIC CHIP 0.0022MF		50V
C551	1-163-023-00	CERAMIC CHIP 0.015MF		50V
C552	1-162-638-11	CERAMIC CHIP 1MF		16V
C553	1-163-133-00	CERAMIC CHIP 470PF	5%	50V
C554	1-164-232-11	CERAMIC CHIP 0.01MF		50V
C555	1-163-125-00	CERAMIC CHIP 220PF	10%	50V
C556	1-163-017-00	CERAMIC CHIP 0.0047MF	10%	50V
C557	1-163-141-00	CERAMIC CHIP 0.001MF	5%	50V
C558	1-163-015-00	CERAMIC CHIP 0.0033MF	10%	50V
C559	1-164-247-11	CERAMIC CHIP 0.047MF	10%	16V
C560	1-162-638-11	CERAMIC CHIP 1MF		16V
C561	1-163-135-00	CERAMIC CHIP 560PF	5%	50V
C562	1-163-109-00	CERAMIC CHIP 47PF	5%	50V
C563	1-163-011-11	CERAMIC CHIP 0.0015MF	10%	50V
C564	1-163-101-00	CERAMIC CHIP 22PF	5%	50V
C565	1-164-247-11	CERAMIC CHIP 0.047MF	10%	16V
C566	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C567	1-164-005-11	CERAMIC CHIP 0.47MF		25V
C570	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C573	1-164-247-11	CERAMIC CHIP 0.047MF	10%	16V
C574	1-162-638-11	CERAMIC CHIP 1MF		16V
C576	1-162-638-11	CERAMIC CHIP 1MF		16V
C577	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C578	1-163-141-00	CERAMIC CHIP 0.001MF	5%	50V
C579	1-163-019-00	CERAMIC CHIP 0.0068MF	10%	50V
C580	1-162-638-11	CERAMIC CHIP 1MF		16V
C581	1-135-092-21	TANTAL. CHIP 3.3MF	20%	16V
C582	1-163-019-00	CERAMIC CHIP 0.0068MF	10%	50V
C590	1-164-161-11	CERAMIC CHIP 0.0022MF		50V
C591	1-164-161-11	CERAMIC CHIP 0.0022MF		50V
C617	1-163-009-11	CERAMIC CHIP 0.001MF	10%	50V
C621	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C622	1-163-123-00	CERAMIC CHIP 180PF	5%	50V
C623	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C624	1-163-101-00	CERAMIC CHIP 22PF	5%	50V
C625	1-163-101-00	CERAMIC CHIP 22PF	5%	50V
C626	1-127-558-11	ELECT(SOLID) 10MF	20%	10V
C627	1-124-638-11	ELECT 22MF	20%	10V
C628	1-163-095-00	CERAMIC CHIP 12PF	5%	50V
C629	1-163-101-00	CERAMIC CHIP 22PF	5%	50V
C630	1-127-558-11	ELECT(SOLID) 10MF	20%	10V
C631	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C632	1-164-247-11	CERAMIC CHIP 0.047MF	10%	16V
C633	1-135-149-21	TANTAL. CHIP 2.2MF	20%	6.3V
		CONNECTOR		
CN101	1-566-529-11	CONNECTOR, FPC (ZIF) 13P		
CN102	*1-566-184-11	PIN, CONNECTOR (PC BOARD) 5P		

Ref.No	Part No.	Description	Remark
CN501	1-566-529-11	CONNECTOR, FPC (ZIF) 13P	
CN502	1-566-531-11	CONNECTOR, FPC (ZIF) 15P	
CN503	1-565-529-21	PIN, CONNECTOR (PC BOARD) 4P	
CN504	1-565-529-21	PIN, CONNECTOR (PC BOARD) 4P	
CN505	*1-565-541-11	PIN, CONNECTOR (PC BOARD) 2P	
CN506	1-565-527-11	PIN, CONNECTOR (PC BOARD) 2P	
CN507	1-566-528-11	CONNECTOR, FPC (ZIF) 12P	
		DIODE	
D504	8-719-100-05	DIODE 1S2838	
D505	8-719-100-05	DIODE 1S2838	
D621	8-719-938-75	DIODE SB05-05CP	
D622	8-719-938-75	DIODE SB05-05CP	
D623	8-719-100-03	DIODE 1S2836	
		FILTER	
FL401	1-236-145-11	FILTER, BAND PASS	
		IC	
IC101	8-752-033-38	IC CXA1202R	
IC401	8-741-150-50	IC SBX1505-01	
IC501	8-752-808-78	IC CXP80116-090Q	
IC502	8-759-990-78	IC S-81350AG-REG	
IC503	8-759-974-21	IC S-8054ALRS-LN	
IC504	8-759-804-72	IC LB1631M	
IC505	8-759-100-94	IC UPC358G2	
IC506	8-759-107-68	IC CX20115A	
IC507	8-759-202-45	IC CX20114	
IC508	8-759-805-06	IC CXA1127MT	
IC509	8-759-209-53	IC CXA1204Q	
IC510	8-759-100-95	IC UPC324G2	
IC621	8-759-945-17	IC MB3775PF	
		COIL	
L101	1-408-777-00	INDUCTOR CHIP 10UH	
L102	1-412-033-11	INDUCTOR CHIP 220UH	
L103	1-412-029-11	INDUCTOR CHIP 10UH	
L104	1-412-033-11	INDUCTOR CHIP 220UH	
L105	1-412-033-11	INDUCTOR CHIP 220UH	
L106	1-412-033-11	INDUCTOR CHIP 220UH	
L107	1-412-033-11	INDUCTOR CHIP 220UH	
L501	1-412-031-11	INDUCTOR CHIP 47UH	
L502	1-412-031-11	INDUCTOR CHIP 47UH	
L503	1-408-795-21	INDUCTOR CHIP 330UH	
L504	1-412-032-11	INDUCTOR CHIP 100UH	
L505	1-412-030-11	INDUCTOR CHIP 22UH	
L506	1-412-032-11	INDUCTOR CHIP 100UH	
L621	1-410-690-11	COIL, CHOKE 22UH	
L622	1-410-626-11	COIL, CHOKE 47UH	
L623	1-410-626-11	COIL, CHOKE 47UH	

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description	Remark
		IC LINK	
PS503⚠	1-532-685-00	LINK, IC	
		TRANSISTOR	
Q102	8-729-100-66	TRANSISTOR 2SC1623	
Q108	8-729-805-69	TRANSISTOR 2SA1341	
Q109	8-729-100-66	TRANSISTOR 2SC1623	
Q110	8-729-100-66	TRANSISTOR 2SC1623	
Q111	8-729-216-22	TRANSISTOR 2SA1162	
Q112	8-729-119-76	TRANSISTOR 2SA1175-HFE	
Q113	8-729-216-22	TRANSISTOR 2SA1162	
Q114	8-729-901-01	TRANSISTOR DTC144EK	
Q116	8-729-805-69	TRANSISTOR 2SA1341	
Q401	8-729-100-66	TRANSISTOR 2SC1623	
Q402	8-729-100-66	TRANSISTOR 2SC1623	
Q403	8-729-805-69	TRANSISTOR 2SA1341	
Q404	8-729-901-01	TRANSISTOR DTC144EK	
Q405	8-729-805-69	TRANSISTOR 2SA1341	
Q406	8-729-100-66	TRANSISTOR 2SC1623	
Q503	8-729-805-39	TRANSISTOR 2SC3898	
Q504	8-729-805-39	TRANSISTOR 2SC3898	
Q506	8-729-216-22	TRANSISTOR 2SA1162	
Q507	8-729-216-22	TRANSISTOR 2SA1162	
Q515	8-729-216-22	TRANSISTOR 2SA1162	
Q516	8-729-100-66	TRANSISTOR 2SC1623	
Q517	8-729-100-66	TRANSISTOR 2SC1623	
Q518	8-729-100-66	TRANSISTOR 2SC1623	
Q519	8-729-100-66	TRANSISTOR 2SC1623	
Q520	8-729-104-95	TRANSISTOR 2SB1040A-4	
Q521	8-729-100-66	TRANSISTOR 2SC1623	
Q522	8-729-216-22	TRANSISTOR 2SA1162	
Q524	8-729-100-66	TRANSISTOR 2SC1623	
Q525	8-729-100-66	TRANSISTOR 2SC1623	
Q526	8-729-216-22	TRANSISTOR 2SA1162	
Q527	8-729-100-66	TRANSISTOR 2SC1623	
Q528	8-729-216-22	TRANSISTOR 2SA1162	
Q529	8-729-100-66	TRANSISTOR 2SC1623	
Q530	8-729-216-22	TRANSISTOR 2SA1162	
Q531	8-729-216-22	TRANSISTOR 2SA1162	
Q532	8-729-216-22	TRANSISTOR 2SA1162	
Q533	8-729-216-22	TRANSISTOR 2SA1162	
Q534	8-729-901-01	TRANSISTOR DTC144EK	
Q535	8-729-901-01	TRANSISTOR DTC144EK	
Q536	8-729-805-39	TRANSISTOR 2SC3898	
Q537	8-729-216-22	TRANSISTOR 2SA1162	
Q538	8-729-100-66	TRANSISTOR 2SC1623	
Q539	8-729-100-66	TRANSISTOR 2SC1623	
Q540	8-729-100-66	TRANSISTOR 2SC1623	
		IC	
IC601	8-752-603-54	IC ICX026BK-2 (CCD IMAGER)	

Ref.No	Part No.	Description	Remark
Q621	8-729-805-43	TRANSISTOR 2SC3396	
Q622	8-729-100-66	TRANSISTOR 2SC1623	
Q623	8-729-805-25	TRANSISTOR 2SB1121	
Q624	8-729-901-01	TRANSISTOR DTC144EK	
Q625	8-729-805-65	TRANSISTOR 2SA1344	
Q626	8-729-100-66	TRANSISTOR 2SC1623	
Q627	8-729-805-25	TRANSISTOR 2SB1121	
Q628	8-729-100-66	TRANSISTOR 2SC1623	
Q629	8-729-100-66	TRANSISTOR 2SC1623	
		RESISTOR	
R102	1-216-101-00	METAL GLAZE 150K 5% 1/10W	
R103	1-216-041-00	METAL GLAZE 470 5% 1/10W	
R104	1-216-065-00	METAL GLAZE 4.7K 5% 1/10W	
R106	1-216-053-00	METAL GLAZE 1.5K 5% 1/10W	
R110	1-216-081-00	METAL GLAZE 22K 5% 1/10W	
R113	1-216-063-00	METAL GLAZE 3.9K 5% 1/10W	
R114	1-216-083-00	METAL GLAZE 27K 5% 1/10W	
R115	1-216-081-00	METAL GLAZE 22K 5% 1/10W	
R116	1-216-085-00	METAL GLAZE 33K 5% 1/10W	
R117	1-216-085-00	METAL GLAZE 33K 5% 1/10W	
R118	1-216-081-00	METAL GLAZE 22K 5% 1/10W	
R119	1-216-083-00	METAL GLAZE 27K 5% 1/10W	
R120	1-216-085-00	METAL GLAZE 33K 5% 1/10W	
R121	1-216-077-00	METAL GLAZE 15K 5% 1/10W	
R122	1-216-051-00	METAL GLAZE 1.2K 5% 1/10W	
R123	1-216-081-00	METAL GLAZE 22K 5% 1/10W	
R124	1-216-013-00	METAL GLAZE 33 5% 1/10W	
R125	1-216-081-00	METAL GLAZE 22K 5% 1/10W	
R126	1-216-053-00	METAL GLAZE 1.5K 5% 1/10W	
R127	1-216-035-00	METAL GLAZE 270 5% 1/10W	
R128	1-216-047-00	METAL GLAZE 820 5% 1/10W	
R129	1-216-089-00	METAL GLAZE 47K 5% 1/10W	
R130	1-216-081-00	METAL GLAZE 22K 5% 1/10W	
R131	1-216-071-00	METAL GLAZE 8.2K 5% 1/10W	
R132	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R133	1-216-019-00	METAL GLAZE 56 5% 1/10W	
R134	1-216-035-00	METAL GLAZE 270 5% 1/10W	
R135	1-216-033-00	METAL GLAZE 220 5% 1/10W	
R136	1-216-081-00	METAL GLAZE 22K 5% 1/10W	
R137	1-216-081-00	METAL GLAZE 22K 5% 1/10W	
R138	1-216-065-00	METAL GLAZE 4.7K 5% 1/10W	
R139	1-216-043-00	METAL GLAZE 560 5% 1/10W	
R140	1-216-041-00	METAL GLAZE 470 5% 1/10W	
R141	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
R143	1-216-095-00	METAL GLAZE 82K 5% 1/10W	
R151	1-216-101-00	METAL GLAZE 150K 5% 1/10W	
R152	1-216-013-00	METAL GLAZE 33 5% 1/10W	
R155	1-216-059-00	METAL GLAZE 2.7K 5% 1/10W	
R156	1-216-041-00	METAL GLAZE 470 5% 1/10W	
R157	1-216-085-00	METAL GLAZE 33K 5% 1/10W	
R158	1-216-039-00	METAL GLAZE 390 5% 1/10W	
R160	1-216-059-00	METAL GLAZE 2.7K 5% 1/10W	

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

When indicating parts by reference number, please include the board name.

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Ref.No	Part No.	Description				Remark
R161	1-216-013-00	METAL GLAZE	33	5%	1/10W	
R401	1-216-041-00	METAL GLAZE	470	5%	1/10W	
R402	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R403	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R404	1-216-053-00	METAL GLAZE	1.5K	5%	1/10W	
R405	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R407	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R408	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R409	1-216-121-00	METAL GLAZE	1M	5%	1/10W	
R410	1-216-011-00	METAL GLAZE	27	5%	1/10W	
R411	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R415	1-216-085-00	METAL GLAZE	33K	5%	1/10W	
R416	1-216-063-00	METAL GLAZE	3.9K	5%	1/10W	
R417	1-216-089-00	METAL GLAZE	47K	5%	1/10W	
R418	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W	
R419	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R421	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R422	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R423	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R430	1-216-295-00	METAL GLAZE	0	5%	1/10W	
R431	1-216-295-00	METAL GLAZE	0	5%	1/10W	
R501	1-216-295-00	METAL GLAZE	0	5%	1/10W	
R502	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R503	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R504	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R505	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R506	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R507	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R508	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R509	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R510	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R511	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R512	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R513	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R514	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R515	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R516	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R517	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R518	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R519	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R520	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R521	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R522	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R523	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R524	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R525	1-216-691-11	METAL CHIP	47K	0.50%	1/10W	
R526	1-216-691-11	METAL CHIP	47K	0.50%	1/10W	
R528	1-216-117-00	METAL GLAZE	680K	5%	1/10W	
R530	1-216-077-00	METAL GLAZE	15K	5%	1/10W	
R531	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R532	1-216-069-00	METAL GLAZE	6.8K	5%	1/10W	
R533	1-216-109-00	METAL GLAZE	330K	5%	1/10W	
R534	1-216-085-00	METAL GLAZE	33K	5%	1/10W	

Ref.No	Part No.	Description				Remark
R535	1-216-121-00	METAL GLAZE	1M	5%	1/10W	
R536	1-216-075-00	METAL GLAZE	12K	5%	1/10W	
R537	1-216-085-00	METAL GLAZE	33K	5%	1/10W	
R538	1-216-077-00	METAL GLAZE	15K	5%	1/10W	
R539	1-216-121-00	METAL GLAZE	1M	5%	1/10W	
R540	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R541	1-216-089-00	METAL GLAZE	47K	5%	1/10W	
R542	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R543	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R544	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R545	1-216-113-00	METAL GLAZE	470K	5%	1/10W	
R546	1-216-089-00	METAL GLAZE	47K	5%	1/10W	
R547	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R548	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R549	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R550	1-216-113-00	METAL GLAZE	470K	5%	1/10W	
R551	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R552	1-216-105-00	METAL GLAZE	220K	5%	1/10W	
R553	1-216-105-00	METAL GLAZE	220K	5%	1/10W	
R554	1-216-182-00	METAL GLAZE	220	5%	1/8W	
R555	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R556	1-216-071-00	METAL GLAZE	8.2K	5%	1/10W	
R557	1-216-051-00	METAL GLAZE	1.2K	5%	1/10W	
R558	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R559	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R560	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R561	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R562	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R563	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R564	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R565	1-216-109-00	METAL GLAZE	330K	5%	1/10W	
R566	1-216-121-00	METAL GLAZE	1M	5%	1/10W	
R567	1-216-111-00	METAL GLAZE	390K	5%	1/10W	
R568	1-216-113-00	METAL GLAZE	470K	5%	1/10W	
R570	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R571	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R572	1-216-121-00	METAL GLAZE	1M	5%	1/10W	
R574	1-216-047-00	METAL GLAZE	820	5%	1/10W	
R575	1-216-101-00	METAL GLAZE	150K	5%	1/10W	
R576	1-216-085-00	METAL GLAZE	33K	5%	1/10W	
R577	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R578	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R579	1-216-025-00	METAL GLAZE	100	5%	1/10W	
R580	1-216-035-00	METAL GLAZE	270	5%	1/10W	
R581	1-216-077-00	METAL GLAZE	15K	5%	1/10W	
R582	1-216-298-00	METAL GLAZE	2.2	5%	1/10W	
R583	1-216-298-00	METAL GLAZE	2.2	5%	1/10W	
R584	1-216-298-00	METAL GLAZE	2.2	5%	1/10W	
R585	1-216-041-00	METAL GLAZE	470	5%	1/10W	
R586	1-216-041-00	METAL GLAZE	470	5%	1/10W	
R587	1-216-085-00	METAL GLAZE	33K	5%	1/10W	
R588	1-216-748-11	METAL GLAZE	39K	5%	1/10W	
R589	1-216-043-00	METAL GLAZE	560	5%	1/10W	

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description				Remark
R590	1-216-035-00	METAL GLAZE	270	5%	1/10W	
R591	1-216-031-00	METAL GLAZE	180	5%	1/10W	
R592	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W	
R593	1-216-071-00	METAL GLAZE	8.2K	5%	1/10W	
R594	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W	
R595	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W	
R596	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W	
R597	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R598	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W	
R599	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R600	1-216-121-00	METAL GLAZE	1M	5%	1/10W	
R601	1-216-047-00	METAL GLAZE	820	5%	1/10W	
R602	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R603	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R604	1-216-085-00	METAL GLAZE	33K	5%	1/10W	
R605	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R606	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R607	1-216-021-00	METAL GLAZE	68	5%	1/10W	
R608	1-216-029-00	METAL GLAZE	150	5%	1/10W	
R609	1-216-069-00	METAL GLAZE	6.8K	5%	1/10W	
R610	1-216-121-00	METAL GLAZE	1M	5%	1/10W	
R611	1-216-083-00	METAL GLAZE	27K	5%	1/10W	
R612	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W	
R613	1-216-083-00	METAL GLAZE	27K	5%	1/10W	
R614	1-216-095-00	METAL GLAZE	82K	5%	1/10W	
R615	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R616	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R617	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R618	1-216-077-00	METAL GLAZE	15K	5%	1/10W	
R619	1-216-109-00	METAL GLAZE	330K	5%	1/10W	
R620	1-216-083-00	METAL GLAZE	27K	5%	1/10W	
R621	1-216-089-00	METAL GLAZE	47K	5%	1/10W	
R622	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R623	1-216-063-00	METAL GLAZE	3.9K	5%	1/10W	
R624	1-216-069-00	METAL GLAZE	6.8K	5%	1/10W	
R625	1-216-069-00	METAL GLAZE	6.8K	5%	1/10W	
R626	1-216-063-00	METAL GLAZE	3.9K	5%	1/10W	
R627	1-216-069-00	METAL GLAZE	6.8K	5%	1/10W	
R628	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R629	1-216-089-00	METAL GLAZE	47K	5%	1/10W	
R630	1-216-045-00	METAL GLAZE	680	5%	1/10W	
R631	1-216-067-00	METAL GLAZE	5.6K	5%	1/10W	
R632	1-216-055-00	METAL GLAZE	1.8K	5%	1/10W	
R633	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R634	1-216-033-00	METAL GLAZE	220	5%	1/10W	
R635	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R636	1-216-089-00	METAL GLAZE	47K	5%	1/10W	
R637	1-216-045-00	METAL GLAZE	680	5%	1/10W	
R638	1-216-067-00	METAL GLAZE	5.6K	5%	1/10W	
R639	1-216-055-00	METAL GLAZE	1.8K	5%	1/10W	
R640	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R641	1-216-136-00	METAL GLAZE	2.7	5%	1/8W	
R642	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	

Ref.No	Part No.	Description				Remark
R643	1-216-051-00	METAL GLAZE	1.2K	5%	1/10W	
R644	1-216-069-00	METAL GLAZE	6.8K	5%	1/10W	
R645	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R652	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R653	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R654	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R655	1-216-089-00	METAL GLAZE	47K	5%	1/10W	
R656	1-216-089-00	METAL GLAZE	47K	5%	1/10W	
R657	1-216-089-00	METAL GLAZE	47K	5%	1/10W	
R658	1-216-089-00	METAL GLAZE	47K	5%	1/10W	
R659	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R660	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R661	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R663	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R664	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R665	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R666	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R667	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R668	1-216-041-00	METAL GLAZE	470	5%	1/10W	
R669	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R670	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R671	1-216-295-00	METAL GLAZE	0	5%	1/10W	

VARIABLE RESISTOR

RV101	1-230-873-11	RES, ADJ, METAL GLAZE 47K
RV102	1-230-873-11	RES, ADJ, METAL GLAZE 47K
RV501	1-230-874-11	RES, ADJ, METAL GLAZE 100K
RV502	1-230-876-11	RES, ADJ, METAL GLAZE 470K
RV551	1-238-225-11	RES, ADJ, METAL GLAZE 47K
RV621	1-230-869-11	RES, ADJ, METAL GRAZE 4.7K

CONNECTOR

W501	1-574-451-11	CABLE, FLAT (1.0MM PITCH) 22P
W502	1-574-451-11	CABLE, FLAT (1.0MM PITCH) 22P

CRYSTAL

X501	1-577-116-11	VIBRATOR, CRYSTAL (16MHz)
X502	1-567-700-11	VIBRATOR, CRYSTAL (5.9MHz)

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*A-7061-558-A VF-22 BOARD, COMPLETE (Ref.No 4,000 Series)
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CAPACITOR

C901	1-126-369-11	ELECT	220MF	20%	6.3V
C902	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C904	1-127-515-11	ELECT(SOLID)	47MF	20%	6.3V
C905	⚠1-163-009-11	CERAMIC CHIP	0.001MF	10%	50V
C906	1-163-115-00	CERAMIC CHIP	82PF	5%	50V
C907	⚠1-162-625-11	CERAMIC CHIP	0.0047MF	5%	50V
C908	⚠1-163-015-00	CERAMIC CHIP	0.0033MF	10%	50V
C909	1-126-193-11	ELECT CHIP	1MF	20%	50V

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

When indicating parts by reference number, please include the board name.

VF-22 LD-17 VF-14

Ref.No	Part No.	Description			Remark
C911	1-131-388-00	TANTALUM	68MF	10%	3.15V
C912	1-102-038-00	CERAMIC	0.001MF		500V
C913	1-163-033-00	CERAMIC CHIP	0.022MF		50V
C915	1-126-193-11	ELECT CHIP	1MF	20%	50V
C916	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V
C917	1-135-166-21	TANTAL. CHIP	47MF	20%	6.3V
C918	1-162-638-11	CERAMIC CHIP	1MF		16V
C919	1-135-070-00	TANTAL. CHIP	0.1MF	10%	35V
C920	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V
		CONNECTOR			
CN901	*1-566-195-21	PIN, CONNECTOR (PC BOARD) 2P			
CN902	*1-566-195-11	PIN, CONNECTOR (PC BOARD) 2P			
CN904	*1-566-759-11	PIN, CONNECTOR (PC BOARD) 4P			
		CONPOSITION CIRCUIT BLOCK			
CP901	1-238-119-11	RES, ADJ			
		SOCKET			
CRT901	1-526-978-21	SOCKET ASSY, CRT			
		DIODE			
D903	8-719-400-20	DIODE MA152WA			
		IC			
IC901	8-759-420-01	IC AN2512S			
		COIL			
L901	1-408-421-00	INDUCTOR	100UH		
L902	1-410-379-21	INDUCTOR CHIP	6.8UH		
L903	⚠ 1-459-858-11	COIL, FERRITE (HLC)			
		TRANSISTOR			
Q902	8-729-402-31	TRANSISTOR 2SD1819A-Q			
Q903	⚠ 8-729-106-68	TRANSISTOR 2SD1615A-GP			
Q904	8-729-216-32	TRANSISTOR 2SA1163			
		RESISTOR			
R902	1-216-051-00	METAL GLAZE	1.2K	5%	1/10W
R903	1-216-041-00	METAL GLAZE	470	5%	1/10W
R904	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R906	1-216-051-00	METAL GLAZE	1.2K	5%	1/10W
R907	1-216-063-00	METAL GLAZE	3.9K	5%	1/10W
R908	1-216-063-00	METAL GLAZE	3.9K	5%	1/10W
R909	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W
R911	1-216-081-00	METAL GLAZE	22K	5%	1/10W
R912	1-216-295-00	METAL GLAZE	0	5%	1/10W
R913	1-216-295-00	METAL GLAZE	0	5%	1/10W
R914	1-216-133-00	METAL GLAZE	3.3M	5%	1/10W
R915	1-216-133-00	METAL GLAZE	3.3M	5%	1/10W
R916	1-216-125-00	METAL GLAZE	1.5M	5%	1/10W
R917	1-216-121-00	METAL GLAZE	1M	5%	1/10W

Ref.No	Part No.	Description			Remark
R919	1-216-097-00	METAL GLAZE	100K	5%	1/10W
R920	1-216-113-00	METAL GLAZE	470K	5%	1/10W
R921	1-216-013-00	METAL GLAZE	33	5%	1/10W
R922	1-216-055-00	METAL GLAZE	1.8K	5%	1/10W
R923	1-216-025-00	METAL GLAZE	100	5%	1/10W
R924	1-216-306-11	METAL GLAZE	3.9	5%	1/10W
R925	1-216-336-11	METAL GLAZE	47K	1%	1/10W
R926	1-218-163-11	METAL GLAZE	120K	1%	1/10W
R928	1-216-870-11	METAL GLAZE	180K	1%	1/10W
R929	1-216-053-00	METAL GLAZE	1.5K	5%	1/10W
R930	1-216-089-00	METAL GLAZE	47K	5%	1/10W
R931	1-216-121-00	METAL GLAZE	1M	5%	1/10W
		VARIABLE RESISTOR			
RV901	1-238-647-11	RES, ADJ, METAL GLAZE 4.7M			
		TRANSFORMER			
T901	⚠ 1-439-428-11	TRANSFORMER ASSY, FLYBACK			
		THERMISTOR			
TH901	1-807-938-11	THERMISTOR 500			

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*1-630-067-11 LD-17 BOARD (Ref.No 5,000 Series)
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Ref.No	Part No.	Description
	*3-674-372-00	HOLDER (A), LED
		DIODE
D901	8-719-941-34	DIODE GL1HD51
D902	8-719-812-41	DIODE TLR124

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*A-7061-560-A VF-14 BOARD, COMPLETE (Ref.No 7,000 Series)
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Ref.No	Part No.	Description			Remark
		CAPACITOR			
C901	1-124-442-00	ELECT	330MF	20%	6.3V
C903	1-163-077-00	CERAMIC CHIP	0.1MF		50V
C904	1-126-160-11	ELECT	1MF	20%	50V
C905	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V
C906	1-131-381-00	TANTALUM	47MF	10%	6.3V
C907	1-162-638-11	CERAMIC CHIP	1MF		16V
C908	1-136-165-00	FILM	0.1MF	5%	50V
C909	1-163-105-00	CERAMIC CHIP	33PF	5%	50V
C910	1-124-587-11	ELECT	220MF	20%	6.3V
C911	1-163-141-00	CERAMIC CHIP	0.001MF	5%	50V
C912	⚠ 1-162-625-11	CERAMIC CHIP	0.0047MF	5%	50V
C913	⚠ 1-162-625-11	CERAMIC CHIP	0.0047MF	5%	50V
C914	⚠ 1-163-209-00	CERAMIC CHIP	0.0015MF	5%	50V
C915	1-126-090-11	ELECT	82MF	20%	10V
C916	1-126-160-11	ELECT	1MF	20%	50V

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

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When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description	Remark
C918	1-163-037-11	CERAMIC CHIP 0.022MF 10%	25V
C919	1-102-038-00	CERAMIC 0.001MF	500V

CONNECTOR

CN902	*1-566-195-11	PIN, CONNECTOR (PC BOARD) 2P	
CN903	*1-566-195-21	PIN, CONNECTOR (PC BOARD) 2P	
CN904	*1-566-759-11	PIN, CONNECTOR (PC BOARD) 4P	

DIODE

D903	8-719-400-20	DIODE MA152WA	

IC

IC901	8-759-420-01	IC AN2512S	

COIL

L901	1-410-831-21	INDUCTOR 82UH	
L902	1-408-976-21	INDUCTOR 33UH	
L903	⚠1-459-858-11	COIL, FERRITE (HLC)	

TRANSISTOR

Q902	⚠8-729-100-66	TRANSISTOR 2SC1623	
Q903	8-729-216-32	TRANSISTOR 2SA1163	
Q904	8-729-100-66	TRANSISTOR 2SC1623	
Q905	⚠8-729-106-68	TRANSISTOR 2SD1615A-GP	

RESISTOR

R901	1-216-073-00	METAL GLAZE 10K 5%	1/10W
R903	1-216-041-00	METAL GLAZE 470 5%	1/10W
R904	1-216-051-00	METAL GLAZE 1.2K 5%	1/10W
R905	1-216-007-00	METAL GLAZE 18 5%	1/10W
R906	1-216-121-00	METAL GLAZE 1M 5%	1/10W
R908	1-216-097-00	METAL GLAZE 100K 5%	1/10W
R909	1-216-113-00	METAL GLAZE 470K 5%	1/10W
R910	1-216-053-00	METAL GLAZE 1.5K 5%	1/10W
R911	1-216-013-00	METAL GLAZE 33 5%	1/10W
R912	1-216-691-11	METAL CHIP 47K 0.50%	1/10W
R913	1-218-163-11	METAL GLAZE 120K 1%	1/10W
R914	1-216-025-00	METAL GLAZE 100 5%	1/10W
R915	1-216-306-11	METAL GLAZE 3.9 5%	1/10W
R917	1-216-047-00	METAL GLAZE 820 5%	1/10W
R918	1-216-069-00	METAL GLAZE 6.8K 5%	1/10W
R919	1-216-748-11	METAL GLAZE 39K 5%	1/10W
R920	1-216-748-11	METAL GLAZE 39K 5%	1/10W
R921	1-216-053-00	METAL GLAZE 1.5K 5%	1/10W
R922	1-216-101-00	METAL GLAZE 150K 5%	1/10W
R923	1-216-121-00	METAL GLAZE 1M 5%	1/10W
R924	1-216-131-11	METAL GLAZE 2.7M 5%	1/10W
R925	1-216-131-11	METAL GLAZE 2.7M 5%	1/10W
R926	1-216-055-00	METAL GLAZE 1.8K 5%	1/10W
R927	1-216-061-00	METAL GLAZE 3.3K 5%	1/10W
R928	1-216-051-00	METAL GLAZE 1.2K 5%	1/10W
R929	1-216-047-00	METAL GLAZE 820 5%	1/10W
R930	1-216-041-00	METAL GLAZE 470 5%	1/10W

Ref.No	Part No.	Description	Remark
R931	1-216-041-00	METAL GLAZE 470 5%	1/10W
R932	1-216-047-00	METAL GLAZE 820 5%	1/10W
R933	1-216-121-00	METAL GLAZE 1M 5%	1/10W

VARIABLE RESISTOR

RV901	1-230-873-11	RES, ADJ, METAL GLAZE 47K	
RV902	1-230-866-11	RES, ADJ, METAL GLAZE 470	
RV904	1-228-762-00	RES, ADJ, METAL GLAZE 1M	

TRANSFORMER

T901	⚠1-439-431-11	TRANSFORMER ASSY, FLYBACK	

THERMISTOR

TH901	1-807-938-11	THERMISTOR 500	

SOCKET

W901	⚠1-540-019-21	SOCKET ASSY, CRT	

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*1-629-384-11 LD-13 BOARD (Ref.No 8,000 Series)
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*3-674-372-00 HOLDER (A), LED

DIODE

D901	8-719-941-34	DIODE GL1HD51	
D902	8-719-812-41	DIODE GL3PR8	

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*A-7061-745-A PS-225 BOARD, COMPLETE (Ref.No 1,000 Series)
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CAPACITOR

C936	1-124-438-00	ELECT 1MF 20%	50V
C937	1-124-438-00	ELECT 1MF 20%	50V
C938	1-163-809-11	CERAMIC CHIP 0.047MF 10%	25V
C939	1-124-438-00	ELECT 1MF 20%	50V
C940	1-164-161-11	CERAMIC CHIP 0.0022MF	50V
C941	1-127-558-11	ELECT(SOLID) 10MF 20%	10V
C942	1-163-125-00	CERAMIC CHIP 220PF 10%	50V
C943	1-163-009-11	CERAMIC CHIP 0.001MF 10%	50V
C944	1-127-561-11	ELECT(SOLID) 33MF 20%	10V
C945	1-162-637-11	CERAMIC CHIP 0.47MF	16V
C955	1-127-558-11	ELECT(SOLID) 10MF 20%	10V
C957	1-124-589-11	ELECT 47MF 20%	10V
C958	1-124-589-11	ELECT 47MF 20%	10V
C959	1-124-589-11	ELECT 47MF 20%	10V
C961	1-164-161-11	CERAMIC CHIP 0.0022MF 10%	50V
C962	1-163-033-00	CERAMIC CHIP 0.022MF	50V
C963	1-163-125-00	CERAMIC CHIP 220PF 10%	50V
C964	1-124-234-00	ELECT 22MF 20%	16V
C965	1-124-261-00	ELECT 10MF 20%	50V

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

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Ne les remplacer que par une pièce portant le numéro spécifié.

When indicating parts by reference number, please include the board name.

PS-225

Ref.No	Part No.	Description	Remark
C966	1-124-261-00	ELECT 10MF 20%	50V
C967	1-127-509-00	ELECT(SOLID) 3.3MF 20%	25V
C968	1-124-598-11	ELECT 22MF 20%	25V
C978	1-163-125-00	CERAMIC CHIP 220PF 5%	50V
C984	1-124-570-11	ELECT 220MF 20%	16V
C985	1-163-019-00	CERAMIC CHIP 0.0068MF 10%	50V
C988	1-164-161-11	CERAMIC CHIP 0.0022MF	50V
C989	1-164-161-11	CERAMIC CHIP 0.0022MF	50V
C990	1-164-161-11	CERAMIC CHIP 0.0022MF	50V
C991	1-163-809-11	CERAMIC CHIP 0.047MF 10%	25V
		CONNECTOR	
CN901	1-506-481-11	PIN, CONNECTOR 2P	
		DIODE	
D935	⚠8-719-106-71	DIODE RD12M-B2	
D936	8-719-800-76	DIODE 1SS226	
D937	8-719-800-76	DIODE 1SS226	
D938	8-719-510-11	DIODE D1FS4	
D939	8-719-801-48	DIODE 1SS193	
D940	8-719-801-48	DIODE 1SS193	
D941	8-719-802-36	DIODE 1SS250	
D942	8-719-801-48	DIODE 1SS193	
D943	8-719-801-48	DIODE 1SS193	
		FUSE	
F901	⚠1-532-778-21	FUSE, MICRO (SECONDARY) (1.6A 125V)	
F902	⚠1-532-593-00	FUSE, GLASS TUBE (1.6A 125V)	
F903	⚠1-532-778-21	FUSE, MICRO (SECONDARY) (1.6A 125V)	
		IC	
IC935	8-759-937-36	IC TL1451ACNS	
		JACK	
J901	1-537-241-11	TERMINAL BOARD (BATTERY)	
		COIL	
L935	1-410-690-11	COIL, CHOKE 22UH	
L937	1-421-918-11	COIL, CHOKE 10UH	
L938	1-410-626-11	COIL, CHOKE 47UH	
L939	1-410-626-11	COIL, CHOKE 47UH	
L940	1-410-828-31	INDUCTOR 47UH	
L942	1-410-626-11	COIL, CHOKE 47UH	
L944	1-410-385-11	INDUCTOR CHIP 22UH	
L946	1-421-918-11	COIL, CHOKE 10UH	
L951	1-410-658-31	INDUCTOR CHIP 220UH	
L952	1-412-026-11	INDUCTOR CHIP 1UH	
L953	1-412-026-11	INDUCTOR CHIP 1UH	
L954	1-412-026-11	INDUCTOR CHIP 1UH	
L955	1-412-026-11	INDUCTOR CHIP 1UH	
L956	1-412-026-11	INDUCTOR CHIP 1UH	
L957	1-412-026-11	INDUCTOR CHIP 1UH	

Ref.No	Part No.	Description	Remark
		TRANSISTOR	
Q935	8-729-805-43	TRANSISTOR 2SC3396	
Q936	8-729-805-67	TRANSISTOR 2SA1342	
Q937	8-729-805-67	TRANSISTOR 2SA1342	
Q938	8-729-805-43	TRANSISTOR 2SC3396	
Q939	8-729-805-67	TRANSISTOR 2SA1342	
Q940	8-729-162-13	TRANSISTOR 2SC1621	
Q941	⚠8-729-105-29	TRANSISTOR 2SB1385	
Q942	8-729-805-25	TRANSISTOR 2SB1121	
Q943	8-729-805-67	TRANSISTOR 2SA1342	
Q944	8-729-805-43	TRANSISTOR 2SC3396	
Q945	8-729-216-22	TRANSISTOR 2SA1162	
Q946	8-729-216-22	TRANSISTOR 2SA1162	
Q947	⚠8-729-140-55	TRANSISTOR 2SK739	
Q952	8-729-901-04	TRANSISTOR DTA114EK	
Q953	8-729-805-45	TRANSISTOR 2SC3395	
		RESISTOR	
R935	1-216-065-00	METAL GLAZE 4.7K 5% 1/10W	
R936	1-216-071-00	METAL GLAZE 8.2K 5% 1/10W	
R937	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R938	1-216-065-00	METAL GLAZE 4.7K 5% 1/10W	
R939	1-216-099-00	METAL GLAZE 120K 5% 1/10W	
R940	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R941	1-216-065-00	METAL GLAZE 4.7K 5% 1/10W	
R942	1-216-748-11	METAL GLAZE 39K 5% 1/10W	
R943	1-216-033-00	METAL GLAZE 220 5% 1/10W	
R944	1-216-051-00	METAL GLAZE 1.2K 5% 1/10W	
R945	1-216-027-00	METAL GLAZE 120 5% 1/10W	
R946	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R947	1-216-059-00	METAL GLAZE 2.7K 5% 1/10W	
R948	1-216-081-00	METAL GLAZE 22K 5% 1/10W	
R949	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R950	1-216-037-00	METAL GLAZE 330 5% 1/10W	
R951	1-216-065-00	METAL GLAZE 4.7K 5% 1/10W	
R953	1-216-099-00	METAL GLAZE 120K 5% 1/10W	
R954	1-216-065-00	METAL GLAZE 4.7K 5% 1/10W	
R955	1-216-065-00	METAL GLAZE 4.7K 5% 1/10W	
R956	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R957	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R958	1-216-035-00	METAL GLAZE 270 5% 1/10W	
R959	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R960	1-216-001-00	METAL GLAZE 10 5% 1/10W	
R961	1-216-085-00	METAL GLAZE 33K 5% 1/10W	
R962	1-216-059-00	METAL GLAZE 2.7K 5% 1/10W	
R975	1-216-063-00	METAL GLAZE 3.9K 5% 1/10W	
R978	1-216-089-00	METAL GLAZE 47K 5% 1/10W	
R985	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R986	1-216-081-00	METAL GLAZE 22K 5% 1/10W	
R987	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R990	1-216-121-00	METAL GLAZE 1M 5% 1/10W	

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

When indicating parts by reference number, please include the board name.

VARIABLE RESISTOR

Ref.No	Part No.	Description	Remark
RV936	1-230-867-11	RES, ADJ, METAL GLAZE 1K	
RV937	1-230-866-11	RES, ADJ, METAL GLAZE 470	
RV938	1-230-869-11	RES, ADJ, METAL GLAZE 4.7K	

TRANSFORMER

Ref.No	Part No.	Description	Remark
T936	1-449-454-11	TRANSFORMER, CONVERTER	

CONNECTOR

Ref.No	Part No.	Description	Remark
W901	1-564-610-11	CONNECTOR, BOARD TO BOARD	
W902	1-564-610-11	CONNECTOR, BOARD TO BOARD	

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*A-7061-738-A CD-17 BOARD, COMPLETE (Ref.No 1,000 Series)
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CAPACITOR

Ref.No	Part No.	Description	Remark
C601	1-126-193-11	ELECT CHIP 1MF 20% 50V	
C602	1-126-208-11	ELECT CHIP 47MF 20% 4V	
C603	1-126-196-11	ELECT CHIP 3.3MF 20% 50V	
C604	1-126-196-11	ELECT CHIP 3.3MF 20% 50V	
C606	1-164-161-11	CERAMIC CHIP 0.0022MF 10% 50V	
C607	1-164-161-11	CERAMIC CHIP 0.0022MF 10% 50V	
C608	1-164-005-11	CERAMIC CHIP 0.47MF 25V	
C610	1-135-145-11	TANTAL. CHIP 0.47MF 20% 25V	
C611	1-164-161-11	CERAMIC CHIP 0.0022MF 10% 50V	
C612	1-163-016-00	CERAMIC CHIP 0.0039MF 10% 50V	
C613	1-164-232-11	CERAMIC CHIP 0.01MF 10% 50V	
C614	1-164-232-11	CERAMIC CHIP 0.01MF 10% 50V	
C615	1-163-009-11	CERAMIC CHIP 0.001MF 10% 50V	
C617	1-163-023-00	CERAMIC CHIP 0.015MF 10% 50V	
C618	1-163-036-00	CERAMIC CHIP 0.068MF 50V	
C619	1-126-405-11	ELECT CHIP 10MF 20% 50V	
C620	1-163-036-00	CERAMIC CHIP 0.068MF 50V	
C621	1-164-161-11	CERAMIC CHIP 0.0022MF 10% 50V	
C630	1-162-638-11	CERAMIC CHIP 1MF 16V	
C631	1-163-117-00	CERAMIC CHIP 100PF 5% 50V	
C632	1-163-117-00	CERAMIC CHIP 100PF 5% 50V	

CONNECTOR

Ref.No	Part No.	Description	Remark
CN601	*1-566-195-11	PIN, CONNECTOR (PC BOARD) 2P	
CN602	*1-566-196-11	PIN, CONNECTOR (PC BOARD) 3P	
CN603	*1-566-195-21	PIN, CONNECTOR (PC BOARD) 2P	
CN604	*1-566-198-11	PIN, CONNECTOR (PC BOARD) 5P	
CN605	*1-566-201-11	PIN, CONNECTOR (PC BOARD) 8P	

DIODE

Ref.No	Part No.	Description	Remark
D601	8-719-400-18	DIODE MA152WK	
D602	8-719-104-34	DIODE 1S2836	
D603	8-719-400-18	DIODE MA152WK	
D604	8-719-400-18	DIODE MA152WK	

COIL

Ref.No	Part No.	Description	Remark
L601	1-410-393-11	INDUCTOR CHIP 100UH	

TRANSISTOR

Ref.No	Part No.	Description	Remark
Q601	8-765-420-02	TRANSISTOR 2SK300-3	
Q602	8-729-100-66	TRANSISTOR 2SC1623	
Q603	8-729-100-66	TRANSISTOR 2SC1623	
Q604	8-729-100-66	TRANSISTOR 2SC1623	
Q605	8-729-100-66	TRANSISTOR 2SC1623	
Q606	8-729-216-22	TRANSISTOR 2SA1162	
Q607	8-729-104-25	TRANSISTOR 2SB804-AV	
Q608	8-729-103-72	TRANSISTOR 2SD1005-BV	
Q609	8-729-216-22	TRANSISTOR 2SA1162	
Q610	8-729-100-66	TRANSISTOR 2SC1623	

RESISTOR

Ref.No	Part No.	Description	Remark
R601	1-216-025-00	METAL GLAZE 100 5% 1/10W	
R602	1-216-081-00	METAL GLAZE 22K 5% 1/10W	
R603	1-216-063-00	METAL GLAZE 3.9K 5% 1/10W	
R604	1-216-075-00	METAL GLAZE 12K 5% 1/10W	
R605	1-216-079-00	METAL GLAZE 18K 5% 1/10W	
R606	1-216-041-00	METAL GLAZE 470 5% 1/10W	
R607	1-216-121-00	METAL GLAZE 1M 5% 1/10W	
R608	1-216-045-00	METAL GLAZE 680 5% 1/10W	
R609	1-216-091-00	METAL GLAZE 56K 5% 1/10W	
R610	1-216-077-00	METAL GLAZE 15K 5% 1/10W	
R611	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R612	1-216-095-00	METAL GLAZE 82K 5% 1/10W	
R613	1-216-095-00	METAL GLAZE 82K 5% 1/10W	
R614	1-216-077-00	METAL GLAZE 15K 5% 1/10W	
R615	1-216-109-00	METAL GLAZE 330K 5% 1/10W	
R616	1-216-005-00	METAL GLAZE 15 5% 1/10W	
R617	1-216-005-00	METAL GLAZE 15 5% 1/10W	
R618	1-216-081-00	METAL GLAZE 22K 5% 1/10W	
R619	1-216-085-00	METAL GLAZE 33K 5% 1/10W	
R620	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R621	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R622	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R630	1-216-081-00	METAL GLAZE 22K 5% 1/10W	
R631	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R632	1-216-095-00	METAL GLAZE 82K 5% 1/10W	
R633	1-216-089-00	METAL GLAZE 47K 5% 1/10W	
R634	1-216-067-00	METAL GLAZE 5.6K 5% 1/10W	
R635	1-216-081-00	METAL GLAZE 22K 5% 1/10W	
R636	1-216-295-00	METAL GLAZE 0 5% 1/10W	

CONNECTOR

Ref.No	Part No.	Description	Remark
W601	1-575-151-11	CABLE, FLAT (1.0MM PITCH)	
W603	1-575-063-11	CABLE, FLAT (1.0MM PITCH) 14P	

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When indicating parts by reference number, please include the board name.

CK-19

Ref.No	Part No.	Description		Remark
	*A-7061-739-A	CK-19 BOARD, COMPLETE (Ref.No 4,000 Series) **********************		
	3-712-410-01	HOLDER, RS		

CAPACITOR

Ref.No	Part No.	Description		Remark
C651	1-163-093-00	CERAMIC CHIP 10PF	5%	50V
C652	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C653	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C654	1-163-105-00	CERAMIC CHIP 33PF	5%	50V
C655	1-135-149-21	TANTAL. CHIP 2.2MF	20%	10V
C656	1-135-149-21	TANTAL. CHIP 2.2MF	20%	10V
C657	1-135-157-21	TANTAL. CHIP 10MF	20%	6.3V
C658	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C659	1-162-638-11	CERAMIC CHIP 1MF		16V
C660	1-163-989-11	CERAMIC CHIP 0.033MF	10%	25V

TRIMMER

Ref.No	Part No.	Description	Remark
CV651	1-141-331-11	CAP, VAR, TRIMMER (CHIP) 30PF	

DIODE

Ref.No	Part No.	Description	Remark
D651	8-719-938-72	DIODE SB01-05CP	
D652	8-719-100-05	DIODE 1S2838	
D653	8-719-100-05	DIODE 1S2838	
D654	8-719-100-05	DIODE 1S2838	
D657	8-719-100-05	DIODE 1S2838	
D658	8-719-100-05	DIODE 1S2838	
D660	8-719-939-11	GP2S09-B	

IC

Ref.No	Part No.	Description	Remark
IC651	8-759-147-08	IC UPD7508BGB-512	

COIL

Ref.No	Part No.	Description	Remark
L651	1-410-391-11	INDUCTOR CHIP 68UH	

TRANSISTOR

Ref.No	Part No.	Description	Remark
Q651	8-729-901-03	TRANSISTOR DTC144WK	
Q652	8-729-216-22	TRANSISTOR 2SA1162	
Q653	8-729-901-03	TRANSISTOR DTC144WK	
Q654	8-729-220-93	TRANSISTOR 2SK209G-TE85L	
Q655	8-729-216-22	TRANSISTOR 2SA1162	
Q656	8-729-216-22	TRANSISTOR 2SA1162	
Q657	8-729-216-22	TRANSISTOR 2SA1162	
Q658	8-729-100-66	TRANSISTOR 2SC1623	
Q659	8-729-100-66	TRANSISTOR 2SC1623	
Q660	8-729-216-22	TRANSISTOR 2SA1162	
Q661	8-729-216-22	TRANSISTOR 2SA1162	
Q662	8-729-902-XX	TRANSISTOR DTC114TK	
Q663	8-729-902-XX	TRANSISTOR DTC114TK	
Q664	8-729-216-22	TRANSISTOR 2SA1162	
Q665	8-729-901-01	TRANSISTOR DTC144EK	

RESISTOR

Ref.No	Part No.	Description				Remark
R651	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R652	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R653	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R654	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R655	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R656	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R657	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R658	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R659	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R660	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R661	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R662	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R663	1-216-089-00	METAL GLAZE	47K	5%	1/10W	
R664	1-216-093-00	METAL GLAZE	68K	5%	1/10W	
R665	1-216-085-00	METAL GLAZE	33K	5%	1/10W	
R666	1-216-025-00	METAL GLAZE	100	5%	1/10W	
R667	1-216-129-00	METAL GLAZE	2.2M	5%	1/10W	
R668	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R669	1-216-105-00	METAL GLAZE	220K	5%	1/10W	
R670	1-216-246-00	METAL GLAZE	100K	5%	1/8W	
R671	1-216-109-00	METAL GLAZE	330K	5%	1/10W	
R672	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R673	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R674	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R675	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R676	1-216-103-00	METAL GLAZE	180K	5%	1/10W	
R677	1-216-121-00	METAL GLAZE	1M	5%	1/10W	
R678	1-218-167-11	METAL GLAZE	330K	1%	1/10W	
R679	1-216-121-00	METAL GLAZE	1M	5%	1/10W	
R680	1-218-167-11	METAL GLAZE	330K	1%	1/10W	
R681	1-216-336-11	METAL GLAZE	47K	1%	1/10W	
R682	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R683	1-216-109-00	METAL GLAZE	330K	5%	1/10W	
R684	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R685	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R686	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R687	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R688	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R689	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R690	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R691	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R692	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R693	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R694	1-216-025-00	METAL GLAZE	100	5%	1/10W	
R696	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R697	1-216-296-00	METAL GLAZE	0	5%	1/8W	
R698	1-216-296-00	METAL GLAZE	0	5%	1/8W	
R699	1-216-296-00	METAL GLAZE	0	5%	1/8W	
R700	1-216-295-00	METAL GLAZE	0	5%	1/10W	
R701	1-216-295-00	METAL GLAZE	0	5%	1/10W	
R702	1-216-296-00	METAL GLAZE	0	5%	1/8W	

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description			Remark
R703	1-216-296-00	METAL GLAZE	0	5%	1/8W
R704	1-216-295-00	METAL GLAZE	0	5%	1/10W
R705	1-216-295-00	METAL GLAZE	0	5%	1/10W
R706	1-216-295-00	METAL GLAZE	0	5%	1/10W
R707	1-216-295-00	METAL GLAZE	0	5%	1/10W
R708	1-216-296-00	METAL GLAZE	0	5%	1/8W
R709	1-216-041-00	METAL GLAZE	470	5%	1/10W
R710	1-216-295-00	METAL GLAZE	0	5%	1/10W
R712	1-216-295-00	METAL GLAZE	0	5%	1/10W

VARIABLE RESISTOR

RV651	1-230-874-11	RES, ADJ, METAL GLAZE 100K

SWITCH

S652	1-571-787-11	SWITCH, TACTILE (SHUTTER SPEED)
S653	1-571-787-11	SWITCH, TACTILE (BACK LIGHIT)
S654	1-571-787-11	SWITCH, TACTILE (WHITE BAL)
S655	1-571-787-11	SWITCH, TACTILE (FOCUS)
S658	1-571-787-11	SWITCH, TACTILE (DATE/ +)
S659	1-571-787-11	SWITCH, TACTILE (TIME/SET)

CRYSTAL

X651	1-527-997-21	VIBRATOR, CRYSTAL (32.768KHz)

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*1-631-825-11 DK-4 BOARD (Ref.No 5,000 Series)

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DIODE

D691	8-719-100-05	DIODE 1S2838
D692	8-719-100-05	DIODE 1S2838

SWITCH

S691	1-571-787-11	SWITCH, TACTILE (ES CUE)
S692	1-571-787-11	SWITCH, TACTILE (ES REV)
S693	1-571-787-11	SWITCH, TACTILE (COUNTER RESET)
S694	1-571-787-11	SWITCH, TACTILE (ZERO MEMO)

CONNECTOR

W652	1-575-062-11	CABLE, FLAT (1.0MM PITCH) 6P

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*A-7061-741-A MA-37 BOARD, COMPLETE (Ref.No 9,000 Series)

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CAPACITOR

Ref.No	Part No.	Description			Remark
C451	1-126-154-11	ELECT	47MF	20%	6.3V
C452	1-162-638-11	CERAMIC CHIP	1MF		16V
C453	1-163-809-11	CERAMIC CHIP	0.047MF	10%	25V
C455	1-163-137-00	CERAMIC CHIP	680PF	5%	50V
C456	1-163-077-00	CERAMIC CHIP	0.1MF	10%	25V
C457	1-163-063-00	CERAMIC CHIP	0.022MF	10%	50V
C458	1-163-009-11	CERAMIC CHIP	0.001MF	10%	50V
C459	1-163-009-11	CERAMIC CHIP	0.001MF	10%	50V
C460	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C464	1-162-638-11	CERAMIC CHIP	1MF		16V
C465	1-163-809-11	CERAMIC CHIP	0.047MF	10%	25V
C466	1-124-225-00	ELECT	100MF	20%	6.3V
C468	1-163-009-11	CERAMIC CHIP	0.001MF	10%	50V
C471	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C474	1-162-638-11	CERAMIC CHIP	1MF		16V

CONNECTOR

CN451	1-565-877-11	PIN, CONNECTOR (PC BOARD) 5P
CN452	*1-566-182-11	PIN, CONNECTOR (PC BOARD) 3P

IC

IC451	8-759-820-51	IC LA7293

JACK

J451	1-507-921-00	JACK (MIC)
J452	1-563-454-11	JACK, MINIATURE (DC OUT)

TRANSISTOR

Q451	8-729-100-66	TRANSISTOR 2SC1623

RESISTOR

R451	1-216-063-00	METAL GLAZE	3.9K	5%	1/10W
R452	1-216-748-11	METAL GLAZE	39K	5%	1/10W
R453	1-216-089-00	METAL GLAZE	47K	5%	1/10W
R455	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R456	1-216-069-00	METAL GLAZE	6.8K	5%	1/10W
R459	1-216-001-00	METAL GLAZE	10	5%	1/10W
R462	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R465	1-216-079-00	METAL GLAZE	18K	5%	1/10W
R467	1-216-059-00	METAL GLAZE	2.7K	5%	1/10W

SWITCH

S451	1-570-910-21	SWITCH, TACTIL (REFLOW TYPE) (REC START/STOP)

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*1-631-828-11 VK-3 BOARD (Ref.No 9,000 Series)

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CONNECTOR

CN508	*1-566-182-11	PIN, CONNECTOR (PC BOARD) 3P

DIODE

D501	8-719-100-05	DIODE 1S2838
D502	8-719-100-03	DIODE 1S2836
D503	8-719-100-03	DIODE 1S2836
D504	8-719-801-41	DIODE 1SS196

When indicating parts by reference number, please include the board name.

VK-3 | CC-26 | CV-8

TRANSISTOR

Ref.No	Part No.	Description	Remark
Q501	8-729-805-39	TRANSISTOR 2SC3898	
Q502	8-729-805-39	TRANSISTOR 2SC3898	

SWITCH

Ref.No	Part No.	Description	Remark
S501	1-571-101-12	SWITCH, SLIDE (POWER CAM/OFF)	
S502	1-571-787-11	SWITCH, TACTILE (◀◀ REW)	
S503	1-571-787-11	SWITCH, TACTILE (▷ PB)	
S504	1-571-787-11	SWITCH, TACTILE (▶▶ FF)	
S505	1-571-787-11	SWITCH, TACTILE (□ STOP)	
S506	1-571-787-11	SWITCH, TACTILE (⏸ PAUSE)	
S507	1-571-102-21	SWITCH, SLIDE (REC)	
S508	1-571-102-11	SWITCH, SLIDE (EJECT)	
S509	1-571-787-11	SWITCH, TACTILE (DATA SCREEN)	
S510	1-553-977-00	SWITCH, SLIDE (EDIT)	

CONNECTOR

Ref.No	Part No.	Description	Remark
W507	1-574-452-12	CABLE, FLAT (1.0MM PITCH) 12P	

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***A-7061-744-A CC-26 BOARD, COMPLETE (Ref.No 7,000 Series)**

CAPACITOR

Ref.No	Part No.	Description	Remark
C001	1-162-638-11	CERAMIC CHIP 1MF 16V	
C002	1-162-638-11	CERAMIC CHIP 1MF 16V	
C003	1-163-038-00	CERAMIC CHIP 0.1MF 25V	

CONNECTOR

Ref.No	Part No.	Description	Remark
CN001	1-566-529-11	CONNECTOR, FPC (ZIF) 13P	
CN002	1-566-527-11	CONNECTOR, FPC (ZIF) 11P	

DIODE

Ref.No	Part No.	Description	Remark
D001	8-719-801-41	DIODE 1SS196	
D002	8-719-801-41	DIODE 1SS196	
D003	8-719-801-41	DIODE 1SS196	

IC

Ref.No	Part No.	Description	Remark
IC001	8-759-100-93	IC UPC393G2	

TRANSISTOR

Ref.No	Part No.	Description	Remark
Q002	8-729-805-39	TRANSISTOR 2SC3898	
Q004	8-729-805-39	TRANSISTOR 2SC3898	
Q005	8-729-805-39	TRANSISTOR 2SC3898	
Q006	8-729-805-41	TRANSISTOR 2SC3398	

RESISTOR

Ref.No	Part No.	Description	Remark
R001	1-216-061-00	METAL GLAZE 3.3K 5% 1/10W	
R002	1-216-109-00	METAL GLAZE 330K 5% 1/10W	
R003	1-216-109-00	METAL GLAZE 330K 5% 1/10W	
R004	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
R005	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
R006	1-216-089-00	METAL GLAZE 47K 5% 1/10W	
R007	1-216-174-00	METAL GLAZE 100 5% 1/8W	
R008	1-216-041-00	METAL GLAZE 470 5% 1/10W	
R009	1-216-121-00	METAL GLAZE 1M 5% 1/10W	
R010	1-216-121-00	METAL GLAZE 1M 5% 1/10W	
R011	1-216-089-00	METAL GLAZE 47K 5% 1/10W	
R012	1-216-109-00	METAL GLAZE 330K 5% 1/10W	
R013	1-216-109-00	METAL GLAZE 330K 5% 1/10W	
R014	1-216-061-00	METAL GLAZE 3.3K 5% 1/10W	
R015	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
R016	1-216-097-00	METAL GLAZE 100K 5% 1/10W	

CONNECTOR

Ref.No	Part No.	Description	Remark
W501	1-574-458-12	CABLE, FLAT (1.0MM PITCH) 13P	

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***A-7061-832-A CV-8 BOARD, COMPLETE (Ref.No 2,000 Series)**

A-7068-128-A MX-7 BOARD, COMPLETE (HIC)

A-7068-150-A DT-73 BOARD, COMPLETE (HIC)

CAPACITOR

Ref.No	Part No.	Description	Remark
C201	1-163-021-91	CERAMIC CHIP 0.01MF 10% 50V	
C202	1-124-779-00	ELECT CHIP 10MF 20% 16V	
C203	1-164-232-11	CERAMIC CHIP 0.01MF 10% 50V	
C204	1-124-779-00	ELECT CHIP 10MF 20% 16V	
C205	1-162-638-11	CERAMIC CHIP 1MF 16V	
C206	1-124-779-00	ELECT CHIP 10MF 20% 16V	
C209	1-126-205-11	ELECT CHIP 47MF 20% 6.3V	
C210	1-162-638-11	CERAMIC CHIP 1MF 16V	
C211	1-163-809-11	CERAMIC CHIP 0.047MF 10% 25V	
C212	1-162-638-11	CERAMIC CHIP 1MF 16V	
C213	1-124-779-00	ELECT CHIP 10MF 20% 16V	
C214	1-126-246-11	ELECT CHIP 220MF 20% 4V	
C215	1-164-232-11	CERAMIC CHIP 0.01MF 50V	
C216	1-124-779-00	ELECT CHIP 10MF 20% 16V	
C217	1-164-232-11	CERAMIC CHIP 0.01MF 10% 50V	
C218	1-162-638-11	CERAMIC CHIP 1MF 16V	
C219	1-126-195-11	ELECT CHIP 2.2MF 20% 50V	
C220	1-163-117-00	CERAMIC CHIP 100PF 5% 50V	
C221	1-163-117-00	CERAMIC CHIP 100PF 5% 50V	
C224	1-126-193-11	ELECT CHIP 1MF 20% 50V	
C225	1-126-195-11	ELECT CHIP 2.2MF 20% 50V	
C226	1-126-198-11	ELECT CHIP 4.7MF 20% 35V	
C227	1-164-232-11	CERAMIC CHIP 0.01MF 10% 50V	
C228	1-126-196-11	ELECT CHIP 3.3MF 20% 50V	
C229	1-164-232-11	CERAMIC CHIP 0.01MF 50V	
C230	1-126-193-11	ELECT CHIP 1MF 20% 50V	
C231	1-164-232-11	CERAMIC CHIP 0.01MF 50V	
C232	1-126-196-11	ELECT CHIP 3.3MF 20% 50V	
C233	1-124-779-00	ELECT CHIP 10MF 20% 16V	

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description			Remark
C234	1-124-779-00	ELECT CHIP	10MF	20%	16V
C235	1-124-779-00	ELECT CHIP	10MF	20%	16V
C236	1-126-193-11	ELECT CHIP	1MF	20%	50V
C237	1-126-193-11	ELECT CHIP	1MF	20%	50V
C238	1-126-196-11	ELECT CHIP	3.3MF	20%	50V
C239	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V
C240	1-126-193-11	ELECT CHIP	1MF	20%	50V
C241	1-126-193-11	ELECT CHIP	1MF	20%	50V
C242	1-126-193-11	ELECT CHIP	1MF	20%	50V
C243	1-126-193-11	ELECT CHIP	1MF	20%	50V
C244	1-126-196-11	ELECT CHIP	3.3MF	20%	50V
C245	1-126-100-11	ELECT	10MF	20%	6.3V
C246	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V
C247	1-124-779-00	ELECT CHIP	10MF	20%	16V
C248	1-124-779-00	ELECT CHIP	10MF	20%	16V
C249	1-124-779-00	ELECT CHIP	10MF	20%	16V
C250	1-124-779-00	ELECT CHIP	10MF	20%	16V
C251	1-163-141-00	CERAMIC CHIP	0.001MF	5%	50V
C252	1-124-779-00	ELECT CHIP	10MF	20%	16V
C253	1-164-232-11	CERAMIC CHIP	0.01MF		50V
C254	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V
C255	1-124-779-00	ELECT CHIP	10MF	20%	16V
C256	1-124-779-00	ELECT CHIP	10MF	20%	16V
C257	1-124-779-00	ELECT CHIP	10MF	20%	16V
C258	1-163-133-00	CERAMIC CHIP	470PF	5%	50V
C259	1-163-131-00	CERAMIC CHIP	390PF	5%	50V
C260	1-124-779-00	ELECT CHIP	10MF	20%	16V
C261	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C262	1-163-118-00	CERAMIC CHIP	110PF	5%	50V
C264	1-124-779-00	ELECT CHIP	10MF	20%	16V
C265	1-124-779-00	ELECT CHIP	10MF	20%	16V
C267	1-163-115-00	CERAMIC CHIP	82PF	5%	50V
C268	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V
C269	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V
C270	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V
C271	1-163-095-00	CERAMIC CHIP	12PF	5%	50V
C273	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C274	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V
C276	1-124-778-00	ELECT CHIP	22MF	20%	6.3V
C277	1-162-638-11	CERAMIC CHIP	1MF		16V
C278	1-163-129-00	CERAMIC CHIP	330PF	5%	50V
C279	1-163-113-00	CERAMIC CHIP	68PF	5%	50V
C280	1-164-232-11	CERAMIC CHIP	0.01MF		50V
C281	1-124-778-00	ELECT CHIP	22MF	20%	6.3V
C287	1-126-100-11	ELECT	10MF	20%	6.3V
C288	1-164-232-11	CERAMIC CHIP	0.01MF		50V
C289	1-124-779-00	ELECT CHIP	10MF	20%	16V
C291	1-163-033-00	CERAMIC CHIP	0.022MF		50V
C292	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V
C293	1-163-095-00	CERAMIC CHIP	12PF	5%	50V
C294	1-163-033-00	CERAMIC CHIP	0.022MF		50V
C295	1-163-101-00	CERAMIC CHIP	22PF	5%	50V
C296	1-163-105-00	CERAMIC CHIP	33PF	5%	50V
C297	1-163-101-00	CERAMIC CHIP	22PF	5%	50V
C298	1-163-986-00	CERAMIC CHIP	0.027MF	10%	25V
C300	1-164-161-11	CERAMIC CHIP	0.0022MF	10%	50V
C301	1-163-105-00	CERAMIC CHIP	33PF	5%	50V
C302	1-163-109-00	CERAMIC CHIP	47PF	5%	50V
C304	1-163-127-00	CERAMIC CHIP	270PF	5%	50V
C305	1-163-133-00	CERAMIC CHIP	470PF	5%	50V
C306	1-124-778-00	ELECT CHIP	22MF	20%	6.3V
C307	1-164-232-11	CERAMIC CHIP	0.01MF		50V
C308	1-163-107-00	CERAMIC CHIP	39PF	5%	50V
C309	1-163-097-00	CERAMIC CHIP	15PF	5%	50V
C310	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V
C311	1-163-109-00	CERAMIC CHIP	47PF	5%	50V
C312	1-163-123-00	CERAMIC CHIP	180PF	5%	50V
C313	1-163-116-00	CERAMIC CHIP	91PF	5%	50V
C314	1-163-109-00	CERAMIC CHIP	47PF	5%	50V
C315	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C316	1-163-115-00	CERAMIC CHIP	82PF	5%	50V
C317	1-163-015-00	CERAMIC CHIP	0.0033MF	10%	50V
C327	1-163-109-00	CERAMIC CHIP	47PF	5%	50V
C333	1-126-193-11	ELECT CHIP	1MF	20%	50V
C350	1-163-121-00	CERAMIC CHIP	150PF	5%	50V
C351	1-163-101-00	CERAMIC CHIP	22PF	5%	50V
C352	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V
C353	1-163-127-00	CERAMIC CHIP	270PF	5%	50V
C355	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C356	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C357	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C360	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C362	1-163-099-00	CERAMIC CHIP	18PF	5%	50V
C363	1-163-133-00	CERAMIC CHIP	470PF	5%	50V
C364	1-164-004-11	CERAMIC CHIP	0.1MF	10%	25V
C365	1-163-093-00	CERAMIC CHIP	10PF	5%	50V
C367	1-163-141-00	CERAMIC CHIP	0.001MF	5%	50V
C368	1-164-004-11	CERAMIC CHIP	0.1MF	10%	25V
C369	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C370	1-164-004-11	CERAMIC CHIP	0.1MF	10%	25V
C371	1-164-004-11	CERAMIC CHIP	0.1MF	10%	25V
C374	1-164-161-11	CERAMIC CHIP	0.0022MF	10%	50V
C501	1-163-105-00	CERAMIC CHIP	33PF	5%	50V
C502	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C503	1-163-109-00	CERAMIC CHIP	47PF	5%	50V
C506	1-164-232-11	CERAMIC CHIP	0.01MF		50V
C507	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V
C508	1-124-779-00	ELECT CHIP	10MF	20%	16V
C509	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V
C510	1-163-009-11	CERAMIC CHIP	0.001MF	10%	50V
C511	1-163-141-00	CERAMIC CHIP	0.001MF	5%	50V
C512	1-163-123-00	CERAMIC CHIP	180PF	5%	50V
C513	1-163-093-00	CERAMIC CHIP	10PF	5%	50V
C514	1-163-005-11	CERAMIC CHIP	470PF	10%	50V
C601	1-135-145-11	TANTAL. CHIP	0.47MF	20%	25V
C602	1-164-161-11	CERAMIC CHIP	0.0022MF	10%	50V

When indicating parts by reference number, please include the board name.

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Ref.No	Part No.	Description		Remark
C603	1-164-161-11	CERAMIC CHIP 0.0022MF	10%	50V
C604	1-162-638-11	CERAMIC CHIP 1MF		16V
C605	1-162-638-11	CERAMIC CHIP 1MF		16V
C606	1-163-100-00	CERAMIC CHIP 20PF	5%	50V
C607	1-163-118-00	CERAMIC CHIP 110PF	5%	50V
C608	1-163-114-00	CERAMIC CHIP 75PF	5%	50V
C609	1-163-100-00	CERAMIC CHIP 20PF	5%	50V
C610	1-163-118-00	CERAMIC CHIP 110PF	5%	50V
C611	1-163-114-00	CERAMIC CHIP 75PF	5%	50V
C612	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C613	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C614	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C615	1-163-097-00	CERAMIC CHIP 15PF	5%	50V
C616	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C617	1-164-232-11	CERAMIC CHIP 0.01MF	10%	50V
C618	1-163-093-00	CERAMIC CHIP 10PF	5%	50V
C619	1-164-232-11	CERAMIC CHIP 0.01MF	10%	50V
C621	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C622	1-163-095-00	CERAMIC CHIP 12PF	5%	50V
C623	1-164-232-11	CERAMIC CHIP 0.01MF	10%	50V
C624	1-163-109-00	CERAMIC CHIP 47PF	5%	50V
C626	1-164-232-11	CERAMIC CHIP 0.01MF	10%	50V
C627	1-163-005-11	CERAMIC CHIP 470PF	10%	50V
C628	1-163-005-11	CERAMIC CHIP 470PF	10%	50V
C629	1-163-005-11	CERAMIC CHIP 470PF	10%	50V
C631	1-164-161-11	CERAMIC CHIP 0.0022MF	10%	50V
C632	1-164-232-11	CERAMIC CHIP 0.01MF	10%	50V
C636	1-126-205-11	ELECT CHIP 47MF	20%	6.3V
C637	1-164-232-11	CERAMIC CHIP 0.01MF	10%	50V
C638	1-164-161-11	CERAMIC CHIP 0.0022MF	10%	50V
C639	1-126-199-11	ELECT CHIP 6.8MF	20%	35V
C640	1-164-232-11	CERAMIC CHIP 0.01MF	10%	50V
C641	1-164-232-11	CERAMIC CHIP 0.01MF	10%	50V
C642	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C647	1-124-778-00	ELECT CHIP 22MF	20%	6.3V
C648	1-164-232-11	CERAMIC CHIP 0.01MF	10%	50V
C650	1-163-109-00	CERAMIC CHIP 47PF	5%	50V
C651	1-163-109-00	CERAMIC CHIP 47PF	5%	50V
C652	1-163-109-00	CERAMIC CHIP 47PF	5%	50V
C653	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C654	1-164-161-11	CERAMIC CHIP 0.0022MF	10%	50V
C655	1-164-161-11	CERAMIC CHIP 0.0022MF	10%	50V
C656	1-163-101-00	CERAMIC CHIP 22PF	5%	50V
C658	1-162-638-11	CERAMIC CHIP 1MF		16V
C660	1-162-638-11	CERAMIC CHIP 1MF		16V
C661	1-163-809-11	CERAMIC CHIP 0.047MF	10%	25V
C662	1-162-638-11	CERAMIC CHIP 1MF		16V
C665	1-162-638-11	CERAMIC CHIP 1MF		16V
C666	1-164-232-11	CERAMIC CHIP 0.01MF	10%	50V
C669	1-164-232-11	CERAMIC CHIP 0.01MF	10%	50V
C672	1-163-131-00	CERAMIC CHIP 390PF	5%	50V
C673	1-163-131-00	CERAMIC CHIP 390PF	5%	50V
C674	1-164-232-11	CERAMIC CHIP 0.01MF	10%	50V

Ref.No	Part No.	Description		Remark
C675	1-163-009-11	CERAMIC CHIP 0.001MF	10%	50V
C676	1-163-101-00	CERAMIC CHIP 22PF	5%	50V
C677	1-164-161-11	CERAMIC CHIP 0.0022MF	10%	50V
C679	1-164-161-11	CERAMIC CHIP 0.0022MF	10%	50V
C690	1-164-005-11	CERAMIC CHIP 0.47MF		25V
C691	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C692	1-135-091-00	TANTAL. CHIP 1MF	20%	16V
C693	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C694	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C695	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C696	1-163-125-00	CERAMIC CHIP 220PF	5%	50V
C697	1-163-111-00	CERAMIC CHIP 56PF	5%	50V
C699	1-164-161-11	CERAMIC CHIP 0.0022MF	10%	50V
C700	1-162-638-11	CERAMIC CHIP 1MF		16V
C701	1-164-232-11	CERAMIC CHIP 0.01MF	10%	50V
C702	1-162-638-11	CERAMIC CHIP 1MF		16V
C703	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C704	1-124-566-11	ELECT 120MF	20%	6.3V
C705	1-164-232-11	CERAMIC CHIP 0.01MF	10%	50V
C706	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C707	1-135-145-11	TANTAL. CHIP 0.47MF	20%	25V
C708	1-164-232-11	CERAMIC CHIP 0.01MF		50V
C709	1-163-093-00	CERAMIC CHIP 10PF	5%	50V
C710	1-164-005-11	CERAMIC CHIP 0.47MF		25V
C712	1-126-205-11	ELECT CHIP 47MF	20%	6.3V
C713	1-164-232-11	CERAMIC CHIP 0.01MF	10%	50V
C714	1-164-232-11	CERAMIC CHIP 0.01MF		50V
C715	1-163-009-11	CERAMIC CHIP 0.001MF	10%	50V
C716	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C718	1-126-196-11	ELECT CHIP 3.3MF	20%	50V
C719	1-135-072-21	TANTAL. CHIP 0.22MF	20%	35V
C721	1-124-779-00	ELECT CHIP 10MF	20%	16V
C722	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C723	1-126-196-11	ELECT CHIP 3.3MF	20%	50V
C724	1-126-196-11	ELECT CHIP 3.3MF	20%	50V
C725	1-162-638-11	CERAMIC CHIP 1MF		16V
C726	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C727	1-126-196-11	ELECT CHIP 3.3MF	20%	50V
C729	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C730	1-162-638-11	CERAMIC CHIP 1MF		16V
C731	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C733	1-126-196-11	ELECT CHIP 3.3MF	20%	50V
C735	1-126-206-11	ELECT CHIP 100MF	20%	6.3V
C736	1-164-232-11	CERAMIC CHIP 0.01MF	10%	50V
C741	1-164-232-11	CERAMIC CHIP 0.01MF	10%	50V
C798	1-164-161-11	CERAMIC CHIP 0.0022MF	10%	50V
C799	1-164-161-11	CERAMIC CHIP 0.0022MF	10%	50V
C801	1-124-779-00	ELECT CHIP 10MF	20%	16V
C802	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C803	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C804	1-164-161-11	CERAMIC CHIP 0.0022MF	10%	50V
C805	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C806	1-163-038-00	CERAMIC CHIP 0.1MF		25V

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description		Remark
C807	1-164-232-11	CERAMIC CHIP 0.01MF		50V
C808	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C809	1-163-115-00	CERAMIC CHIP 82PF	5%	50V
C810	1-163-119-00	CERAMIC CHIP 120PF	5%	50V
C811	1-163-125-00	CERAMIC CHIP 220PF	5%	50V
C812	1-163-125-00	CERAMIC CHIP 220PF	5%	50V
C813	1-162-638-11	CERAMIC CHIP 1MF		16V
C814	1-164-232-11	CERAMIC CHIP 0.01MF		50V
C815	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C817	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C818	1-162-638-11	CERAMIC CHIP 1MF		16V
C819	1-164-232-11	CERAMIC CHIP 0.01MF		50V
C820	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C821	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C822	1-164-232-11	CERAMIC CHIP 0.01MF		50V
C824	1-162-638-11	CERAMIC CHIP 1MF		16V
C825	1-162-637-11	CERAMIC CHIP 0.47MF		16V
C826	1-162-637-11	CERAMIC CHIP 0.47MF		16V
C827	1-164-232-11	CERAMIC CHIP 0.01MF		50V
C828	1-164-232-11	CERAMIC CHIP 0.01MF		50V
C829	1-163-125-00	CERAMIC CHIP 220PF	5%	50V
C830	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C832	1-164-005-11	CERAMIC CHIP 0.47MF		25V
C835	1-163-033-00	CERAMIC CHIP 0.022MF		50V
C836	1-164-232-11	CERAMIC CHIP 0.01MF	10%	50V
C837	1-164-232-11	CERAMIC CHIP 0.01MF	10%	50V
C838	1-163-093-00	CERAMIC CHIP 10PF	5%	50V
C839	1-164-232-11	CERAMIC CHIP 0.01MF	10%	50V
C840	1-164-161-11	CERAMIC CHIP 0.0022MF	10%	50V
C841	1-163-033-00	CERAMIC CHIP 0.022MF		50V
C842	1-164-232-11	CERAMIC CHIP 0.01MF		50V
C843	1-124-779-00	ELECT CHIP 10MF	20%	16V
C844	1-126-205-11	ELECT CHIP 47MF	20%	6.3V
C845	1-163-009-11	CERAMIC CHIP 0.001MF	10%	50V
C846	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C848	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C849	1-164-005-11	CERAMIC CHIP 0.47MF		25V

CONNECTOR

Ref.No	Part No.	Description		Remark
CN202	*1-565-541-11	PIN, CONNECTOR (PC BOARD) 2P		
CN501	1-568-165-11	CONNECTOR, FPC (1.0MM) (ZIF) 22P		
CN502	1-568-165-11	CONNECTOR, FPC (1.0MM) (ZIF) 22P		
CN601	1-566-547-11	CONNECTOR, FPC (NON ZIF) 15P		
CN602	1-565-527-11	PIN, CONNECTOR (PC BOARD) 2P		
CN801	1-566-530-11	CONNECTOR, FPC (ZIF) 14P		
CN802	1-568-207-11	CONNECTOR, FPC (ZIF) 23P		
CN803	*1-565-543-11	PIN, CONNECTOR (PC BOARD) 4P		
CN901	*1-566-759-11	PIN, CONNECTOR (PC BOARD) 4P		

TRIMMER

Ref.No	Part No.	Description		Remark
CV501	1-141-331-11	CAP, VAR, TRIMMER (CHIP) 30P		
CV502	1-141-331-11	CAP, VAR, TRIMMER (CHIP) 30P		

DIODE

Ref.No	Part No.	Description	Remark
D210	8-719-800-76	DIODE 1SS226	
D211	8-719-800-76	DIODE 1SS226	
D213	8-719-100-05	DIODE 1S2838	
D214	8-719-940-45	DIODE DWA010	
D215	8-719-940-45	DIODE DWA010	
D501	8-713-220-00	DIODE 1T32-2	
D601	8-719-100-03	DIODE 1S2836	
D602	8-719-100-05	DIODE 1S2838	
D604	8-719-100-05	DIODE 1S2838	
D606	8-719-100-05	DIODE 1S2838	
D804	8-719-100-05	DIODE 1S2838	

FILTER

Ref.No	Part No.	Description	Remark
FL201	1-409-439-11	FILTER, TRAP	
FL202	1-236-146-11	FILTER, BAND PASS	
FL203	1-567-727-11	FILTER, CERAMIC	
FL601	1-236-189-11	FILTER, LOW PASS	
FL602	1-236-374-11	LPF, YDL	
FL603	1-236-375-11	LPF, YDL	
FL604	1-236-192-11	FILTER, LOW PASS	
FL617	1-415-695-11	DL, LC	
FL801	1-236-209-11	FILTER, LOW PASS	

IC

Ref.No	Part No.	Description	Remark
IC201	8-752-033-40	IC CXA1201Q	
IC202	8-752-323-46	IC CXL1501M	
IC203	8-752-034-40	IC CXA1200BQ	
IC501	8-759-140-26	IC UPD6145G-601	
IC502	8-759-970-80	IC MB673198U	
IC601	8-759-031-48	IC MC68HC05N4-SC406656	
IC602	8-759-932-54	IC BU4066BF	
IC603	8-759-100-95	IC UPC324G2	
IC604	8-752-326-08	IC CXD1159Q	
IC605	8-752-034-21	IC CXA1339R	
IC606	8-752-033-34	IC CXA1072R	
IC608	8-759-946-00	IC MB88341PFV	
IC609	8-759-946-00	IC MB88341PFV	
IC610	8-759-937-56	IC S-8054ALB-LM-S	
IC801	8-752-326-18	IC CXD1204R	
IC802	8-759-031-85	IC MC68HC05C4FU	
IC803	8-759-971-93	IC MSM6219GS-VK	
IC804	8-759-946-00	IC MB88341PFV	
IC805	8-759-030-35	IC MPC1725MR	
IC806	8-759-100-94	IC UPC358G2	
IC807	8-759-981-82	IC RC3414M	
IC808	8-759-100-94	IC UPC358G2	
IC810	8-759-231-23	IC TK10500M	

COIL

Ref.No	Part No.	Description	Remark
L201	1-412-032-11	INDUCTOR CHIP 100UH	
L203	1-412-032-11	INDUCTOR CHIP 100UH	

When indicating parts by reference number, please include the board name.

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Ref.No	Part No.	Description	Remark
L204	1-412-031-11	INDUCTOR CHIP 47UH	
L205	1-412-031-11	INDUCTOR CHIP 47UH	
L206	1-410-388-21	INDUCTOR CHIP 39UH	
L207	1-410-385-11	INDUCTOR CHIP 22UH	
L208	1-412-029-11	INDUCTOR CHIP 10UH	
L209	1-412-032-11	INDUCTOR CHIP 100UH	
L210	1-410-387-11	INDUCTOR CHIP 33UH	
L211	1-410-656-11	INDUCTOR CHIP 150UH	
L212	1-410-381-11	INDUCTOR CHIP 10UH	
L214	1-408-797-11	INDUCTOR CHIP 470UH	
L215	1-408-795-21	INDUCTOR CHIP 330UH	
L216	1-408-795-21	INDUCTOR CHIP 330UH	
L217	1-410-657-21	INDUCTOR CHIP 180UH	
L219	1-412-032-11	INDUCTOR CHIP 100UH	
L220	1-410-380-31	INDUCTOR CHIP 8.2UH	
L221	1-408-795-21	INDUCTOR CHIP 330UH	
L222	1-410-655-31	INDUCTOR CHIP 120UH	
L223	1-410-393-11	INDUCTOR CHIP 100UH	
L224	1-410-656-11	INDUCTOR CHIP 150UH	
L227	1-410-389-11	INDUCTOR CHIP 47UH	
L228	1-410-388-21	INDUCTOR CHIP 39UH	
L229	1-410-392-11	INDUCTOR CHIP 82UH	
L230	1-410-383-31	INDUCTOR CHIP 15UH	
L231	1-412-026-11	INDUCTOR CHIP 1UH	
L501	1-410-390-11	INDUCTOR CHIP 56UH	
L502	1-412-032-11	INDUCTOR CHIP 100UH	
L503	1-408-797-11	INDUCTOR CHIP 470UH	
L601	1-412-031-11	INDUCTOR CHIP 47UH	
L602	1-410-381-11	INDUCTOR CHIP 10UH	
L603	1-412-029-11	INDUCTOR CHIP 10UH	
L604	1-412-026-11	INDUCTOR CHIP 1UH	
L605	1-412-026-11	INDUCTOR CHIP 1UH	
L606	1-412-026-11	INDUCTOR CHIP 1UH	
L607	1-412-032-11	INDUCTOR CHIP 100UH	
L608	1-412-029-11	INDUCTOR CHIP 10UH	
L609	1-410-393-11	INDUCTOR CHIP 100UH	
L610	1-412-029-11	INDUCTOR CHIP 10UH	
L612	1-412-029-11	INDUCTOR CHIP 10UH	
L613	1-412-031-11	INDUCTOR CHIP 47UH	
L614	1-410-657-21	INDUCTOR CHIP 180UH	
L801	1-410-655-31	INDUCTOR CHIP 120UH	

TRANSISTOR

Ref.No	Part No.	Description	Remark
Q202	8-729-100-66	TRANSISTOR 2SC1623	
Q203	8-729-100-66	TRANSISTOR 2SC1623	
Q204	8-729-103-96	TRANSISTOR 2SB798-T1DL	
Q206	8-729-805-45	TRANSISTOR 2SC3395	
Q207	8-729-805-45	TRANSISTOR 2SC3395	
Q210	8-729-106-60	TRANSISTOR 2SB1115A	
Q211	8-729-216-22	TRANSISTOR 2SA1162	
Q212	8-729-100-66	TRANSISTOR 2SC1623	
Q213	8-729-216-22	TRANSISTOR 2SA1162	
Q214	8-729-100-66	TRANSISTOR 2SC1623	
Q215	8-729-100-66	TRANSISTOR 2SC1623	
Q216	8-729-100-66	TRANSISTOR 2SC1623	
Q217	8-729-216-22	TRANSISTOR 2SA1162	
Q222	8-729-216-22	TRANSISTOR 2SA1162	
Q223	8-729-805-45	TRANSISTOR 2SC3395	
Q224	8-729-102-06	TRANSISTOR 2SC2223-F13	
Q225	8-729-100-66	TRANSISTOR 2SC1623	
Q226	8-729-901-06	TRANSISTOR DTA144EK	
Q227	8-729-901-06	TRANSISTOR DTA144EK	
Q228	8-729-100-66	TRANSISTOR 2SC1623	
Q229	8-729-216-22	TRANSISTOR 2SA1162	
Q230	8-729-122-63	TRANSISTOR 2SA1226	
Q231	8-729-102-06	TRANSISTOR 2SC2223-F13	
Q232	8-729-102-06	TRANSISTOR 2SC2223-F13	
Q233	8-729-216-22	TRANSISTOR 2SA1162	
Q235	8-729-100-66	TRANSISTOR 2SC1623	
Q236	8-729-100-66	TRANSISTOR 2SC1623	
Q241	8-729-216-22	TRANSISTOR 2SA1162	
Q243	8-729-216-22	TRANSISTOR 2SA1162	
Q244	8-729-805-45	TRANSISTOR 2SC3395	
Q245	8-729-805-45	TRANSISTOR 2SC3395	
Q250	8-729-100-66	TRANSISTOR 2SC1623	
Q251	8-729-216-22	TRANSISTOR 2SA1162	
Q252	8-729-900-53	TRANSISTOR DTC114EK	
Q253	8-729-102-06	TRANSISTOR 2SC2223-F13	
Q254	8-729-805-45	TRANSISTOR 2SC3395	
Q501	8-729-100-66	TRANSISTOR 2SC1623	
Q502	8-729-100-66	TRANSISTOR 2SC1623	
Q503	8-729-805-45	TRANSISTOR 2SC3395	
Q551	8-729-901-06	TRANSISTOR DTA144EK	
Q552	8-729-903-30	TRANSISTOR DTC144TK	
Q553	8-729-903-30	TRANSISTOR DTC144TK	
Q602	8-729-100-66	TRANSISTOR 2SC1623	
Q603	8-729-216-22	TRANSISTOR 2SA1162	
Q604	8-729-902-XX	TRANSISTOR DTC114TK	
Q605	8-729-805-45	TRANSISTOR 2SC3395	
Q606	8-729-805-45	TRANSISTOR 2SC3395	
Q607	8-729-902-XX	TRANSISTOR DTC114TK	
Q608	8-729-100-66	TRANSISTOR 2SC1623	
Q609	8-729-100-66	TRANSISTOR 2SC1623	
Q610	8-729-216-22	TRANSISTOR 2SA1162	
Q611	8-729-100-66	TRANSISTOR 2SC1623	
Q612	8-729-216-22	TRANSISTOR 2SA1162	
Q614	8-729-216-22	TRANSISTOR 2SA1162	
Q615	8-729-100-66	TRANSISTOR 2SC1623	
Q617	8-729-100-66	TRANSISTOR 2SC1623	
Q618	8-729-100-66	TRANSISTOR 2SC1623	
Q619	8-729-100-66	TRANSISTOR 2SC1623	
Q620	8-729-100-66	TRANSISTOR 2SC1623	
Q621	8-729-902-XX	TRANSISTOR DTC114TK	
Q622	8-729-902-XX	TRANSISTOR DTC114TK	
Q623	8-729-902-XX	TRANSISTOR DTC114TK	
Q624	8-729-902-XX	TRANSISTOR DTC114TK	

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description	Remark
Q625	8-729-216-22	TRANSISTOR 2SA1162	
Q626	8-729-100-66	TRANSISTOR 2SC1623	
Q627	8-729-216-22	TRANSISTOR 2SA1162	
Q628	8-729-216-22	TRANSISTOR 2SA1162	
Q629	8-729-920-08	TRANSISTOR DTC124TK	
Q630	8-729-216-22	TRANSISTOR 2SA1162	
Q631	8-729-216-22	TRANSISTOR 2SA1162	
Q632	8-729-100-66	TRANSISTOR 2SC1623	
Q633	8-729-216-22	TRANSISTOR 2SA1162	
Q634	8-729-100-66	TRANSISTOR 2SC1623	
Q635	8-729-216-22	TRANSISTOR 2SA1162	
Q638	8-729-216-22	TRANSISTOR 2SA1162	
Q639	8-729-902-XX	TRANSISTOR DTC114TK	
Q641	8-729-100-66	TRANSISTOR 2SC1623	
Q642	8-729-216-22	TRANSISTOR 2SA1162	
Q644	8-729-216-22	TRANSISTOR 2SA1162	
Q645	8-729-100-66	TRANSISTOR 2SC1623	
Q646	8-729-216-22	TRANSISTOR 2SA1162	
Q647	8-729-100-66	TRANSISTOR 2SC1623	
Q648	8-729-216-22	TRANSISTOR 2SA1162	
Q801	8-729-216-22	TRANSISTOR 2SA1162	
Q802	8-729-100-66	TRANSISTOR 2SC1623	
Q803	8-729-402-19	TRANSISTOR XN6501	
Q804	8-729-402-19	TRANSISTOR XN6501	
Q806	8-729-100-66	TRANSISTOR 2SC1623	
Q807	8-729-100-66	TRANSISTOR 2SC1623	
Q809	8-729-902-XX	TRANSISTOR DTC114TK	
Q810	8-729-902-XX	TRANSISTOR DTC114TK	
Q811	8-729-901-06	TRANSISTOR DTA144EK	
Q812	8-729-901-06	TRANSISTOR DTA144EK	
Q816	8-729-100-66	TRANSISTOR 2SC1623	
Q817	8-729-216-22	TRANSISTOR 2SA1162	
Q818	8-729-100-66	TRANSISTOR 2SC1623	
Q819	8-729-805-25	TRANSISTOR 2SB1121	
Q820	8-729-100-66	TRANSISTOR 2SC1623	
Q822	8-729-216-22	TRANSISTOR 2SA1162	
Q824	8-729-901-03	TRANSISTOR DTC144WK	
Q825	8-729-901-03	TRANSISTOR DTC144WK	
Q826	8-729-216-22	TRANSISTOR 2SA1162	
Q827	8-729-100-66	TRANSISTOR 2SC1623	
Q828	8-729-216-22	TRANSISTOR 2SA1162	
Q830	8-729-903-30	TRANSISTOR DTC144TK	

RESISTOR

Ref.No	Part No.	Description	Remark
R201	1-216-699-11	METAL CHIP 100K 0.50% 1/10W	
R206	1-216-089-00	METAL GLAZE 47K 5% 1/10W	
R207	1-216-061-00	METAL GLAZE 3.3K 5% 1/10W	
R208	1-216-047-00	METAL GLAZE 820 5% 1/10W	
R209	1-216-079-00	METAL GLAZE 18K 5% 1/10W	
R210	1-216-067-00	METAL GLAZE 5.6K 5% 1/10W	
R211	1-216-304-11	METAL GLAZE 3.3 5% 1/10W	
R212	1-216-015-00	METAL GLAZE 39 5% 1/10W	
R213	1-216-015-00	METAL GLAZE 39 5% 1/10W	
R214	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R215	1-216-022-00	METAL GLAZE 75 5% 1/10W	
R216	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R218	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
R219	1-216-053-00	METAL GLAZE 1.5K 5% 1/10W	
R220	1-216-081-00	METAL GLAZE 22K 5% 1/10W	
R226	1-216-065-00	METAL GLAZE 4.7K 5% 1/10W	
R227	1-216-041-00	METAL GLAZE 470 5% 1/10W	
R231	1-216-121-00	METAL GLAZE 1M 5% 1/10W	
R232	1-216-027-00	METAL GLAZE 120 5% 1/10W	
R233	1-216-095-00	METAL GLAZE 82K 5% 1/10W	
R234	1-216-121-00	METAL GLAZE 1M 5% 1/10W	
R235	1-216-121-00	METAL GLAZE 1M 5% 1/10W	
R236	1-216-047-00	METAL GLAZE 820 5% 1/10W	
R237	1-216-065-00	METAL GLAZE 4.7K 5% 1/10W	
R238	1-216-051-00	METAL GLAZE 1.2K 5% 1/10W	
R240	1-216-117-00	METAL GLAZE 680K 5% 1/10W	
R241	1-216-093-00	METAL GLAZE 68K 5% 1/10W	
R242	1-216-666-11	METAL CHIP 4.3K 0.50% 1/10W	
R243	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R246	1-216-651-11	METAL CHIP 1K 0.50% 1/10W	
R247	1-216-643-11	METAL CHIP 470 0.50% 1/10W	
R248	1-216-071-00	METAL GLAZE 8.2K 5% 1/10W	
R249	1-216-059-00	METAL GLAZE 2.7K 5% 1/10W	
R250	1-216-041-00	METAL GLAZE 470 5% 1/10W	
R251	1-216-057-00	METAL GLAZE 2.2K 5% 1/10W	
R252	1-216-113-00	METAL GLAZE 470K 5% 1/10W	
R253	1-216-051-00	METAL GLAZE 1.2K 5% 1/10W	
R254	1-216-047-00	METAL GLAZE 820 5% 1/10W	
R256	1-216-047-00	METAL GLAZE 820 5% 1/10W	
R257	1-216-047-00	METAL GLAZE 820 5% 1/10W	
R258	1-216-081-00	METAL GLAZE 22K 5% 1/10W	
R260	1-216-029-00	METAL GLAZE 150 5% 1/10W	
R261	1-216-121-00	METAL GLAZE 1M 5% 1/10W	
R262	1-216-057-00	METAL GLAZE 2.2K 5% 1/10W	
R263	1-216-047-00	METAL GLAZE 820 5% 1/10W	
R264	1-216-053-00	METAL GLAZE 1.5K 5% 1/10W	
R265	1-216-021-00	METAL GLAZE 68 5% 1/10W	
R266	1-216-083-00	METAL GLAZE 27K 5% 1/10W	
R267	1-216-057-00	METAL GLAZE 2.2K 5% 1/10W	
R268	1-216-057-00	METAL GLAZE 2.2K 5% 1/10W	
R269	1-216-043-00	METAL GLAZE 560 5% 1/10W	
R270	1-216-057-00	METAL GLAZE 2.2K 5% 1/10W	
R271	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R274	1-216-063-00	METAL GLAZE 3.9K 5% 1/10W	
R283	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R284	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R286	1-216-053-00	METAL GLAZE 1.5K 5% 1/10W	
R287	1-216-053-00	METAL GLAZE 1.5K 5% 1/10W	
R288	1-216-081-00	METAL GLAZE 22K 5% 1/10W	
R289	1-216-055-00	METAL GLAZE 1.8K 5% 1/10W	
R290	1-216-041-00	METAL GLAZE 470 5% 1/10W	
R291	1-216-021-00	METAL GLAZE 68 5% 1/10W	

When indicating parts by reference number, please include the board name.

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Ref.No	Part No.	Description				Remark
R292	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R293	1-216-079-00	METAL GLAZE	18K	5%	1/10W	
R294	1-216-079-00	METAL GLAZE	18K	5%	1/10W	
R296	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R297	1-216-053-00	METAL GLAZE	1.5K	5%	1/10W	
R298	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R300	1-216-085-00	METAL GLAZE	33K	5%	1/10W	
R301	1-216-043-00	METAL GLAZE	560	5%	1/10W	
R302	1-216-037-00	METAL GLAZE	330	5%	1/10W	
R303	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R304	1-216-053-00	METAL GLAZE	1.5K	5%	1/10W	
R305	1-216-027-00	METAL GLAZE	120	5%	1/10W	
R306	1-216-045-00	METAL GLAZE	680	5%	1/10W	
R307	1-216-033-00	METAL GLAZE	220	5%	1/10W	
R309	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R310	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R311	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R312	1-216-043-00	METAL GLAZE	560	5%	1/10W	
R313	1-216-025-00	METAL GLAZE	100	5%	1/10W	
R314	1-216-041-00	METAL GLAZE	470	5%	1/10W	
R315	1-216-041-00	METAL GLAZE	470	5%	1/10W	
R316	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R317	1-216-071-00	METAL GLAZE	8.2K	5%	1/10W	
R318	1-216-043-00	METAL GLAZE	560	5%	1/10W	
R319	1-216-043-00	METAL GLAZE	560	5%	1/10W	
R320	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R321	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R322	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R323	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R324	1-216-025-00	METAL GLAZE	100	5%	1/10W	
R332	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R333	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R334	1-216-053-00	METAL GLAZE	1.5K	5%	1/10W	
R335	1-216-055-00	METAL GLAZE	1.8K	5%	1/10W	
R336	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R337	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W	
R348	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R353	1-216-089-00	METAL GLAZE	47K	5%	1/10W	
R355	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R358	1-216-295-00	METAL GLAZE	0	5%	1/10W	
R369	1-216-079-00	METAL GLAZE	18K	5%	1/10W	
R376	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R377	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R378	1-216-748-11	METAL GLAZE	39K	5%	1/10W	
R380	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R381	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R382	1-216-053-00	METAL GLAZE	1.5K	5%	1/10W	
R383	1-216-045-00	METAL GLAZE	680	5%	1/10W	
R384	1-216-055-00	METAL GLAZE	1.8K	5%	1/10W	
R385	1-216-045-00	METAL GLAZE	680	5%	1/10W	
R386	1-216-748-11	METAL GLAZE	39K	5%	1/10W	
R387	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R389	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R391	1-216-089-00	METAL GLAZE	47K	5%	1/10W	
R392	1-216-089-00	METAL GLAZE	47K	5%	1/10W	
R393	1-216-089-00	METAL GLAZE	47K	5%	1/10W	
R394	1-216-113-00	METAL GLAZE	470K	5%	1/10W	
R395	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R396	1-216-033-00	METAL GLAZE	220	5%	1/10W	
R399	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R403	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W	
R404	1-216-067-00	METAL GLAZE	5.6K	5%	1/10W	
R405	1-216-059-00	METAL GLAZE	2.7K	5%	1/10W	
R406	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R407	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R408	1-216-053-00	METAL GLAZE	1.5K	5%	1/10W	
R409	1-216-045-00	METAL GLAZE	680	5%	1/10W	
R410	1-216-025-00	METAL GLAZE	100	5%	1/10W	
R411	1-216-051-00	METAL GLAZE	1.2K	5%	1/10W	
R412	1-216-131-11	METAL GLAZE	2.7M	5%	1/10W	
R414	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R415	1-216-113-00	METAL GLAZE	470K	5%	1/10W	
R501	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R502	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R503	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R504	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R505	1-216-089-00	METAL GLAZE	47K	5%	1/10W	
R506	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R507	1-216-089-00	METAL GLAZE	47K	5%	1/10W	
R508	1-216-075-00	METAL GLAZE	12K	5%	1/10W	
R509	1-216-063-00	METAL GLAZE	3.9K	5%	1/10W	
R510	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R511	1-216-091-00	METAL GLAZE	56K	5%	1/10W	
R512	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R513	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R514	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R515	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R516	1-216-083-00	METAL GLAZE	27K	5%	1/10W	
R517	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R518	1-216-085-00	METAL GLAZE	33K	5%	1/10W	
R519	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R520	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R521	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R522	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R523	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R524	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R525	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R526	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R527	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R551	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R552	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R553	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R603	1-216-053-00	METAL GLAZE	1.5K	5%	1/10W	
R604	1-216-059-00	METAL GLAZE	2.7K	5%	1/10W	
R605	1-216-059-00	METAL GLAZE	2.7K	5%	1/10W	
R606	1-216-073-00	METAL GLAZE	10K	5%	1/10W	

When indicating parts by reference number, please include the board name.

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Ref.No	Part No.	Description				Remark
R607	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R608	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R609	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R610	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R611	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R612	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R613	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R614	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R615	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R616	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R617	1-216-134-00	METAL GLAZE	2.2	5%	1/8W	
R618	1-216-071-00	METAL GLAZE	8.2K	5%	1/10W	
R619	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R620	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R621	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R622	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R623	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R624	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R625	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R626	1-216-068-00	METAL GLAZE	6.2K	5%	1/10W	
R627	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R628	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R629	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R630	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R631	1-216-031-00	METAL GLAZE	180	5%	1/10W	
R632	1-216-077-00	METAL GLAZE	15K	5%	1/10W	
R633	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R634	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R635	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R636	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R637	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R638	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R639	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R640	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R641	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R642	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R643	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R644	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R645	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R646	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R647	1-216-055-00	METAL GLAZE	1.8K	5%	1/10W	
R648	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R649	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R650	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R651	1-216-103-00	METAL GLAZE	180K	5%	1/10W	
R652	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R653	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R656	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R657	1-216-748-11	METAL GLAZE	39K	5%	1/10W	
R658	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R659	1-216-033-00	METAL GLAZE	220	5%	1/10W	
R660	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R662	1-216-049-00	METAL GLAZE	1K	5%	1/10W	

Ref.No	Part No.	Description				Remark
R674	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R675	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R677	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R681	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R682	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R685	1-216-079-00	METAL GLAZE	18K	5%	1/10W	
R686	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R687	1-216-041-00	METAL GLAZE	470	5%	1/10W	
R688	1-216-055-00	METAL GLAZE	1.8K	5%	1/10W	
R690	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R696	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R697	1-216-055-00	METAL GLAZE	1.8K	5%	1/10W	
R698	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R699	1-216-295-00	METAL GLAZE	0	5%	1/10W	
R700	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R702	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R703	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R705	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R711	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R713	1-216-748-11	METAL GLAZE	39K	5%	1/10W	
R715	1-216-075-00	METAL GLAZE	12K	5%	1/10W	
R716	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R717	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R718	1-216-045-00	METAL GLAZE	680	5%	1/10W	
R719	1-216-075-00	METAL GLAZE	12K	5%	1/10W	
R720	1-216-077-00	METAL GLAZE	15K	5%	1/10W	
R721	1-216-079-00	METAL GLAZE	18K	5%	1/10W	
R722	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R723	1-216-079-00	METAL GLAZE	18K	5%	1/10W	
R724	1-216-077-00	METAL GLAZE	15K	5%	1/10W	
R726	1-216-052-00	METAL GLAZE	1.3K	5%	1/10W	
R728	1-216-068-00	METAL GLAZE	6.2K	5%	1/10W	
R729	1-216-039-00	METAL GLAZE	390	5%	1/10W	
R730	1-216-067-00	METAL GLAZE	5.6K	5%	1/10W	
R731	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R732	1-216-075-00	METAL GLAZE	12K	5%	1/10W	
R733	1-216-091-00	METAL GLAZE	56K	5%	1/10W	
R734	1-216-079-00	METAL GLAZE	18K	5%	1/10W	
R735	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W	
R736	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R737	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R738	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R739	1-216-071-00	METAL GLAZE	8.2K	5%	1/10W	
R740	1-216-091-00	METAL GLAZE	56K	5%	1/10W	
R741	1-216-093-00	METAL GLAZE	68K	5%	1/10W	
R742	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R744	1-216-089-00	METAL GLAZE	47K	5%	1/10W	
R745	1-216-748-11	METAL GLAZE	39K	5%	1/10W	
R746	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R747	1-216-085-00	METAL GLAZE	33K	5%	1/10W	
R749	1-216-121-00	METAL GLAZE	1M	5%	1/10W	
R750	1-216-103-00	METAL GLAZE	180K	5%	1/10W	
R751	1-216-097-00	METAL GLAZE	100K	5%	1/10W	

When indicating parts by reference number, please include the board name.

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Ref.No	Part No.	Description				Remark
R752	1-216-047-00	METAL GLAZE	820	5%	1/10W	
R753	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R754	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R756	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R757	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R758	1-216-047-00	METAL GLAZE	820	5%	1/10W	
R759	1-216-072-00	METAL GLAZE	9.1K	5%	1/10W	
R760	1-216-051-00	METAL GLAZE	1.2K	5%	1/10W	
R761	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R762	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R763	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R764	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R765	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R767	1-216-051-00	METAL GLAZE	1.2K	5%	1/10W	
R768	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R770	1-216-085-00	METAL GLAZE	33K	5%	1/10W	
R771	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R772	1-216-071-00	METAL GLAZE	8.2K	5%	1/10W	
R773	1-216-091-00	METAL GLAZE	56K	5%	1/10W	
R774	1-216-089-00	METAL GLAZE	47K	5%	1/10W	
R776	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W	
R777	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R780	1-216-089-00	METAL GLAZE	47K	5%	1/10W	
R781	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R782	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R783	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R785	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R786	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R787	1-216-295-00	METAL GLAZE	0	5%	1/10W	
R788	1-216-059-00	METAL GLAZE	2.7K	5%	1/10W	
R789	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R790	1-216-295-00	METAL GLAZE	0	5%	1/10W	
R791	1-216-059-00	METAL GLAZE	2.7K	5%	1/10W	
R792	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R793	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R801	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W	
R802	1-218-158-11	METAL GLAZE	27K	1%	1/10W	
R803	1-216-324-11	METAL GLAZE	10K	1%	1/10W	
R804	1-216-324-11	METAL GLAZE	10K	1%	1/10W	
R805	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R806	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R807	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R808	1-216-043-00	METAL GLAZE	560	5%	1/10W	
R809	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R810	1-216-043-00	METAL GLAZE	560	5%	1/10W	
R811	1-216-051-00	METAL GLAZE	1.2K	5%	1/10W	
R812	1-216-033-00	METAL GLAZE	220	5%	1/10W	
R813	1-216-134-00	METAL GLAZE	2.2	5%	1/8W	
R814	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W	
R815	1-216-017-00	METAL GLAZE	47	5%	1/10W	
R816	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R817	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R818	1-216-049-00	METAL GLAZE	1K	5%	1/10W	

Ref.No	Part No.	Description				Remark
R819	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R820	1-216-045-00	METAL GLAZE	680	5%	1/10W	
R821	1-216-095-00	METAL GLAZE	82K	5%	1/10W	
R822	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R823	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R824	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R825	1-216-093-00	METAL GLAZE	68K	5%	1/10W	
R826	1-216-748-11	METAL GLAZE	39K	5%	1/10W	
R827	1-216-113-00	METAL GLAZE	470K	5%	1/10W	
R828	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R829	1-216-121-00	METAL GLAZE	1M	5%	1/10W	
R831	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R832	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R833	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R836	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R837	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R838	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R839	1-216-043-00	METAL GLAZE	560	5%	1/10W	
R840	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R841	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R842	1-216-134-00	METAL GLAZE	2.2	5%	1/8W	
R843	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R844	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R845	1-216-063-00	METAL GLAZE	3.9K	5%	1/10W	
R846	1-216-033-00	METAL GLAZE	220	5%	1/10W	
R847	1-216-033-00	METAL GLAZE	220	5%	1/10W	
R848	1-216-033-00	METAL GLAZE	220	5%	1/10W	
R849	1-216-144-00	METAL GLAZE	5.6	5%	1/8W	
R850	1-216-134-00	METAL GLAZE	2.2	5%	1/8W	
R857	1-216-069-00	METAL GLAZE	6.8K	5%	1/10W	
R858	1-216-067-00	METAL GLAZE	5.6K	5%	1/10W	
R859	1-216-067-00	METAL GLAZE	5.6K	5%	1/10W	
R860	1-216-748-11	METAL GLAZE	39K	5%	1/10W	
R861	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R862	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R863	1-216-091-00	METAL GLAZE	56K	5%	1/10W	
R864	1-216-083-00	METAL GLAZE	27K	5%	1/10W	
R865	1-216-091-00	METAL GLAZE	56K	5%	1/10W	
R866	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R867	1-216-105-00	METAL GLAZE	220K	5%	1/10W	
R868	1-216-071-00	METAL GLAZE	8.2K	5%	1/10W	
R869	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R870	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R871	1-216-295-00	METAL GLAZE	0	5%	1/10W	
R872	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R873	1-216-025-00	METAL GLAZE	100	5%	1/10W	
R874	1-216-093-00	METAL GLAZE	68K	5%	1/10W	
R875	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R876	1-216-101-00	METAL GLAZE	150K	5%	1/10W	
R877	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R878	1-216-748-11	METAL GLAZE	39K	5%	1/10W	
R879	1-216-121-00	METAL GLAZE	1M	5%	1/10W	
R880	1-216-025-00	METAL GLAZE	100	5%	1/10W	

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description	Remark
R881	1-216-748-11	METAL GLAZE 39K 5% 1/10W	
R882	1-216-077-00	METAL GLAZE 15K 5% 1/10W	
R883	1-216-053-00	METAL GLAZE 1.5K 5% 1/10W	
R884	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
R885	1-216-099-00	METAL GLAZE 120K 5% 1/10W	
R886	1-216-121-00	METAL GLAZE 1M 5% 1/10W	
R887	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R888	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R889	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R890	1-216-144-00	METAL GLAZE 5.6 5% 1/8W	
R891	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R892	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R893	1-216-121-00	METAL GLAZE 1M 5% 1/10W	
R894	1-216-748-11	METAL GLAZE 39K 5% 1/10W	
R895	1-216-077-00	METAL GLAZE 15K 5% 1/10W	
R896	1-216-059-00	METAL GLAZE 2.7K 5% 1/10W	
R897	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R898	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R899	1-216-067-00	METAL GLAZE 5.6K 5% 1/10W	
		VARIABLE RESISTOR	
RV201	1-230-873-11	RES, ADJ, METAL GLAZE 47K	
RV202	1-230-870-11	RES, ADJ, METAL GLAZE 10K	
RV203	1-230-873-11	RES, ADJ, METAL GLAZE 47K	
RV204	1-230-868-11	RES, ADJ, METAL GLAZE 2.2K	
RV205	1-230-869-11	RES, ADJ, METAL GLAZE 4.7K	
RV206	1-230-867-11	RES, ADJ, METAL GLAZE 1K	
RV207	1-230-868-11	RES, ADJ, METAL GLAZE 2.2K	
RV208	1-230-866-11	RES, ADJ, METAL GLAZE 470	
RV209	1-230-867-11	RES, ADJ, METAL GLAZE 1K	
RV552	1-230-874-11	RES, ADJ, METAL GLAZE 100K	
RV801	1-230-875-21	RES, ADJ, METAL GRAZE 220K	
		CRYSTAL	
X201	1-577-080-11	VIBRATOR, CRYSTAL (3.58MHz)	
X601	1-577-118-11	VIBRATOR, LITHIUM NIOBATE (4MHz)	
X603	1-567-898-11	OSCILLATOR, CRYSTAL (28MHz)	

****

*1-629-372-12 LI-5 BOARD (Ref.No 3,000 Series)
****

Ref.No	Part No.	Description	Remark
		RESISTOR	
R938	1-216-295-00	METAL GLAZE 0 5% 1/10W	
R939	1-216-295-00	METAL GLAZE 0 5% 1/10W	
R940	1-216-081-00	METAL GLAZE 22K 5% 1/10W	
R941	1-216-057-00	METAL GLAZE 2.2K 5% 1/10W	
		CONNECTOR	
W802	1-574-457-12	CABLE, FLAT (1.0MM PITCH) 23P	

****

*1-631-827-11 KS-6 BOARD (Ref.No 8,000 Series)
****

Ref.No	Part No.	Description	Remark
		CONNECOTR	
CN501	*1-562-880-21	CONNECOTR, CARD EDGE 15P	
		CONNECOTR	
W502	1-574-456-11	CABLE, FLAT (1.0MM PITCH) 15P	

****

*1-631-831-11 RC-29 BOARD (Ref.No 10,000 Series)
****

Ref.No	Part No.	Description	Remark
		CONNECTOR	
CN401	1-566-760-11	PIN, CONNECTOR (PC BOARD) 5P	
CN951	1-566-192-11	PIN, CONNECTOR (PC BOARD) 13P	
CN952	*1-566-182-11	PIN, CONNECTOR (PC BOARD) 3P	
		JACK	
J951	1-565-276-11	JACK, ULTRA SMALL 1P (REMOTE)	
J952	1-507-921-00	JACK (⑦)	
		COIL	
L991	1-410-369-11	INDUCTOR CHIP 1UH	
L992	1-410-369-11	INDUCTOR CHIP 1UH	
L993	1-410-369-11	INDUCTOR CHIP 1UH	
L994	1-410-369-11	INDUCTOR CHIP 1UH	
		RESISTOR	
R995	1-216-296-00	METAL GLAZE 0 5% 1/8W	
		SWITCH	
S951	1-553-977-00	SWITCH, SLIDE (STANDBY)	
S952	1-571-838-11	SWITCH, TACTIL (START/STOP)	

****

1-628-060-12 FP-89 FLEXIBLE BOARD (Ref.No 6,000 Series)
****

Ref.No	Part No.	Description	Remark
	1-571-664-11	SWITCH, SLIDE (ENCODER)	
	3-728-869-02	HOLDER, SENSOR	
		DIODE	
D301	8-719-800-44	PHOTO COUPLER TLP907-0	
		TRANSISTOR	
Q301	8-729-906-48	TRANSISTOR EE-TP109	

****

When indicating parts by reference number, please include the board name.

FP-90

Ref.No	Part No.	Description	Remark
	1-628-061-12	FP-90 FLEXIBLE BOARD	(Ref.No 8,000 Series)
	3-728-837-01	HOLDER, LED	
	3-728-869-02	HOLDER, SENSOR	

DIODE

Ref.No	Part No.	Description	Remark
D302	8-719-940-81	DIODE GL452S	
D303	8-719-820-44	PHOTO COUPLER TLP907-0	

TRANSISTOR

Ref.No	Part No.	Description	Remark
Q302	8-729-906-48	TRANSISTOR EE-TP109	

SWITCH

Ref.No	Part No.	Description	Remark
S302	1-571-680-11	SWITCH, PUSH (3 KEY) (REC PROOF/TAPE SELECT)	

* * *

MISCELLANEOUS

Ref.No	Part No.	Description	Remark
	⚠1-451-310-21	DEFLECTION YOKE (B/W)	
	1-542-125-21	MICROPHONE (C-2027)	
	1-808-505-12	SENSOR (DEW)	
IC601	A-7030-124-A	IC ICX026BK-2 (CCD IMAGER)	
M902	8-835-331-01	MOTOR, DC U-22A (CAPSTAN)	
M903	A-7040-160-A	MOTOR ASSY, THREADING	
S901	1-571-837-11	SWITCH, PUSH (ZOOM)	
S903	1-571-099-11	SWITCH (CASSETTE DOWN)	
V901	⚠1-452-482-11	CRT ASSY (M91JYZ60WB) (VF-14 BOARD)	
V901	⚠1-546-065-11	CATHODE-RAY TUBE, B/W (MOIJVV47WB) (VF-22 BOARD)	

* * *

ACCESORIES AND PACKING MATERIALS

Part No.	Description	Remark
*3-340-514-01	BAG, PROTECTION	
3-701-625-00	BAG, POLYETHYLENE	
*3-732-952-01	CUSHION (UPPER)	
*3-732-953-01	CUSHION (LOWER)	
3-735-474-01	FLYER, PV/DECK (US MODEL (CCD-F45/F46))	
3-750-731-21	MANUAL, INSTRUCTION (ENGLISH, FRENCH, SPANISH) (CCD-F45)	
3-750-731-81	MANUAL, INSTRUCTION (ENGLISH, FRENCH, SPANISH) (CCD-F360)	
3-750-731-91	MANUAL, INSTRUCTION (ENGLISH, FRENCH, SPANISH) (CCD-F46)	
*3-764-631-12	INSTRUCTION, DEW CONDENSATION (CCD-F360)	

* * *

**** ACCESSORIES AND PACKING MATERIALS (KIT) ****

Part No.	Description
A-6767-701-A	RFU ADAPTOR (RFU-89UCA) (CCD-F45/F46)
A-6767-816-A	RFU ADAPTOR (RFU-89NA) (CCD-F360)
*1-571-163-31	SWITCH, ANTENNA CHANGE (CABLE)
*3-733-938-01	CUSHION, ACC
3-733-958-01	BELT, CARRYING (CCD-F45(CANADIAN MODEL))
*3-733-977-41	INDIVIDUAL CARTON (CCD-F45)
*3-733-977-71	INDIVIDUAL CARTON (CCD-F46)
*3-737-771-11	INDIVIDUAL CARTON (CCD-F360)
** AC-V30	AC POWER ADAPTOR
*** NP-55	RECHARGEBLE BATTERY

Note

** MARK PARTS IS AVAILABLE FOR REPAIR SERVICE.
*** MARK PARTS IS AVAILABLE AS AN OPTIONAL ACCESSORY.

* * *

HARDWARE LIST

SCREW

Part No.	Description
7-621-281-15	SCREW +P 2X2
7-621-772-00	SCREW +B 2X3
7-627-553-37	PRECISION SCREW +P 2X3 TYPE 3
7-627-553-48	PRECISION SCREW +P 2X4 TYPE 3

STEAL BALL

Part No.	Description
7-671-113-02	STEAL, BALL 3
7-671-156-01	BALL, STAINLESS

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

When indicating parts by reference number, please include the board name.

SECTION 7
CAMERA ADJUSTMENTS

During the adjustment, see the adjustment element location to the adjustment from page 234.

7-1. PRE-ADJUSTMENT PREPARATIONS (CAMERA BLOCK)

7-1-1. List of Servicing Jigs

- Oscilloscope
- Regulated power supply (2 units)
- Adjusting screwdriver
- Color monitor
- Vectorscope
- Digital voltmeter

Ref. No.	Part Name	Part No.	Use
J-1	Filter (C14) for color temperature correction (Combination of C2 and C12)	J-6080-058-A	Auto white balance confirmation
J-2	ND filter 1.0	J-6080-808-A	Max. gain adjustment (two used)
	ND filter 0.4	J-6080-806-A	Iris adjustment, iris in/out adjustment (two used), max. gain adjustment
	ND filter 0.1	J-6080-807-A	Iris adjustment, iris in/out adjustment
J-3	Pattern box PTB-500 *	J-6029-140-A	
J-4	Pattern box color chart	J-6020-250-A	
J-5	Siemens star	J-6080-875-A	For flange back adjustment
J-6	AF microcomputer data reading jig	J-6082-025-A	
J-7	Adjustment remote controller	J-6082-053-A	

* PTB-100 is not available.

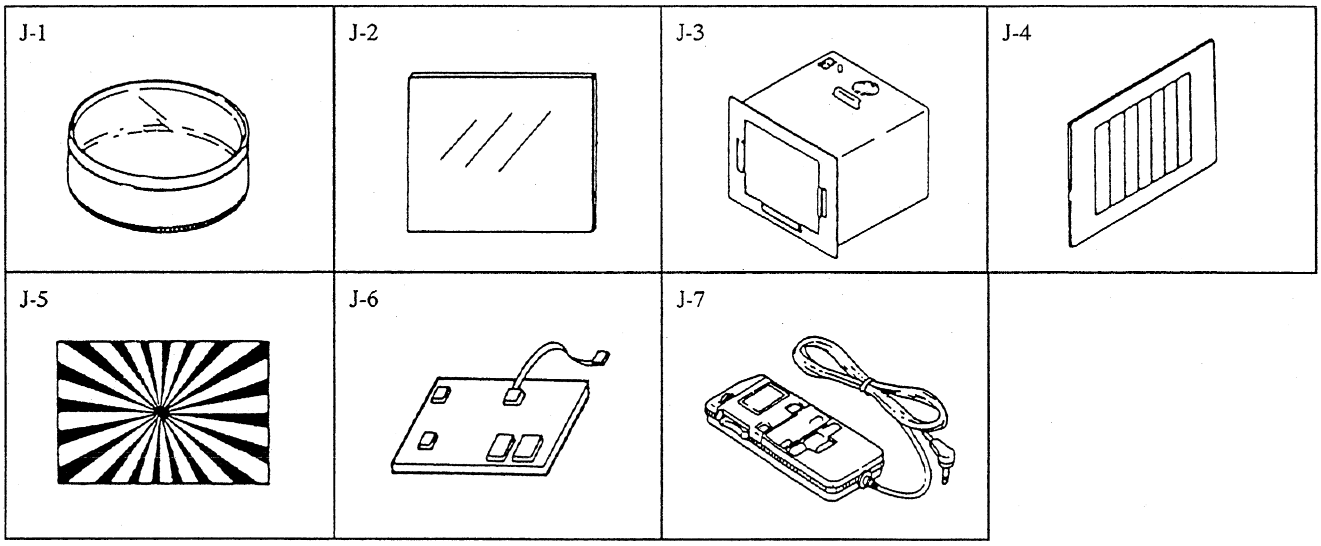

J-1
J-2
J-3
J-4
J-5
J-6
J-7

Fig. 7-1.

7-1-2. Preparations

Note: Refer to "2. DISASSEMBLY" for details on removal of the cabinet and various boards.

1) Connect the various devices for adjustment as shown in Fig. 7-3.
2) The EVF (electronic viewfinder) is needed for confirmation of the white balance mode and shutter speed. This can confirmed on the monitor screen by turning on the data screen (ON/OFF by S509 on VK-3 board). Remove CN901 on the CV-8 board when the EVF is not needed.
3) The mic amplifier (MA-37 board) is not needed. Remove CN401 on the CO-2 board.

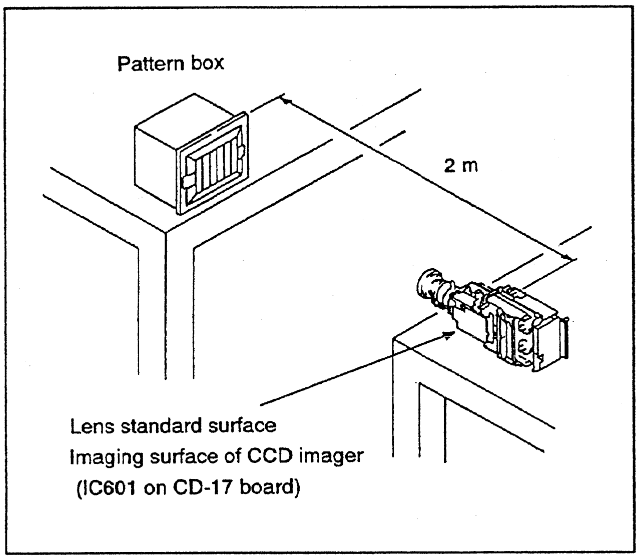
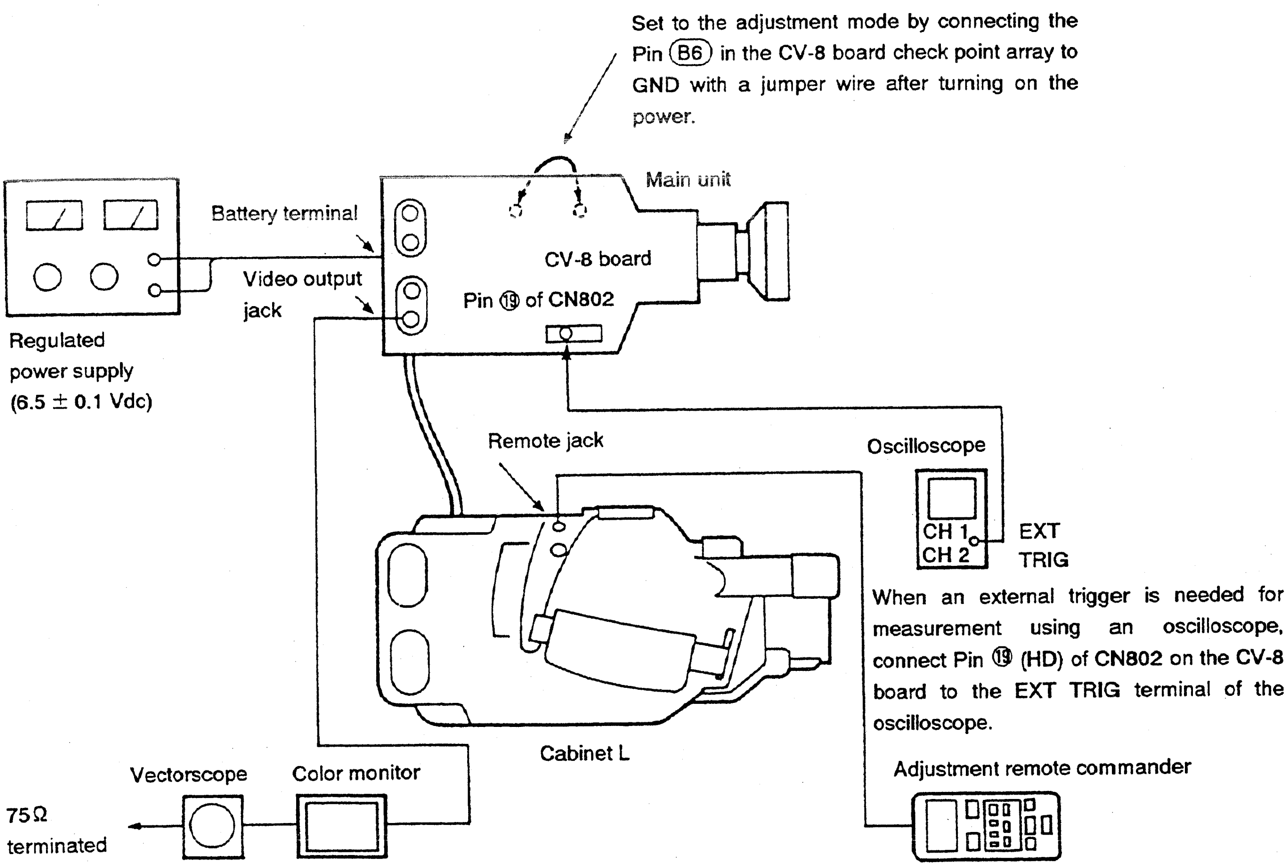

Pattern box
2 m
Lens standard surface
Imaging surface of CCD imager
(IC601 on CD-17 board)

Fig. 7-2.


Main unit
Battery terminal
CV-8 board
Video output jack
Pin ⑲ of CN802
Regulated power supply (6.5 ± 0.1 Vdc)
Remote jack
Oscilloscope
CH 1
CH 2
EXT TRIG
Cabinet L
Vectorscope
Color monitor
75Ω terminated
Adjustment remote commander

Set to the adjustment mode by connecting the Pin (B6) in the CV-8 board check point array to GND with a jumper wire after turning on the power.

When an external trigger is needed for measurement using an oscilloscope, connect Pin ⑲ (HD) of CN802 on the CV-8 board to the EXT TRIG terminal of the oscilloscope.

Fig. 7-3.

7-1-3. Precautions

1) Setting of Switches
Unless indicated otherwise, the switches are set to the following positions and adjustment is made without a cassette inserted.
   1. Camera/video power switch (S501 on VK-3 board) ......camera
   2. Standby switch (S951 on RC-29 board) ......ON
   3. Auto-lock switch (S651 on CK-19 board) ......OFF
   4. White balance button (S654 on CK-19 board) ...... ☼ (indoors white balance mode)
   5. Shutter button (S652 on CK-19 board) ......normal (1/60)

2) Adjustment Order
As a rule, the adjustments are performed in the listed order.

3) Subjects
   1. Color bar chart (standard picture frame)
   When performing adjustment using the color bar chart, adjusting the picture frame shown in Fig. 7-4. (standard picture frame).
   2. White pattern (standard picture frame)
   Remove the color bar chart from the pattern box and use the zoom lever so that the white pattern has the same size and is the same position as the color bar chart (standard picture frame).

Color bar chart standard picture frame

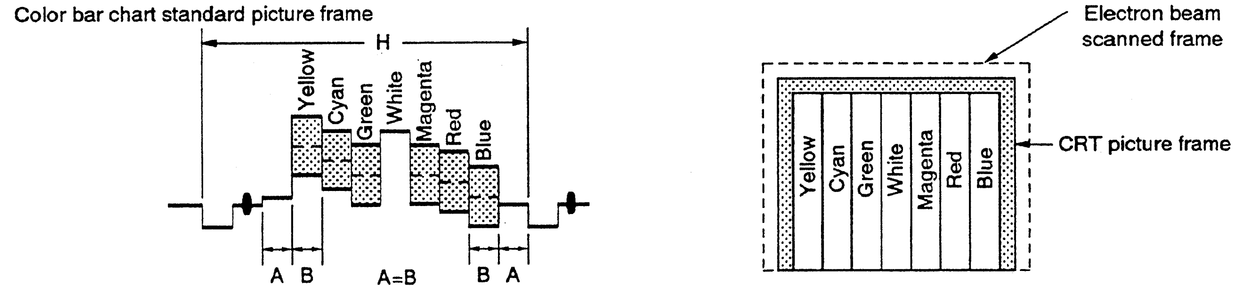


Fig. a (Video output terminal output waveform)

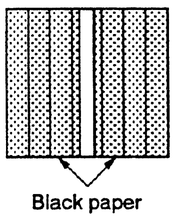
Fig. b (Picture on monitor TV)

Adjust the zooming and direction of the camera to obtain the output waveform shown in Fig. a and the monitor TV picture shown in Fig. b.

Fig. 7-4.

   3. All white pattern
   Remove the color bar chart from the pattern box and set the zoom lever fully to the TELE (68 mm) side.
   4. High luminance pattern
   Create the high luminance pattern as shown in Fig. 7-5., and adjust for the picture frame shown in Fig. 7-6.
   5. Siemens star (J-6080-875-A)
   Adjust the direction of the camera so that center of the Siemens star is lined up with the center of the monitor screen on the monitor TV screen.

High luminance pattern



Attach black paper over all sections of the pattern except for half the width of the white bar. Record this with the standard picture frame.

Fig. 7-5.

High luminance pattern

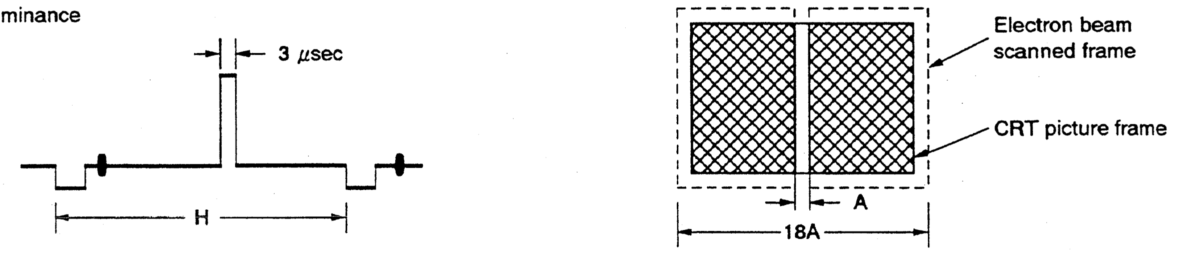


Fig. a (Video output terminal output waveform)

Fig. b (Picture on monitor TV)

Adjust the zooming and direction of the camera to obtain the output waveform shown in Fig. a and the monitor TV picture shown in Fig. b.

Fig. 7-6.

7-1-4. Adjustment Remote Controller

An EVR (electronic variable resistor) is used as the adjustment element for the camera block, replacing the conventional semi-fixed resistor. The EVR is controlled by the EVR/AWB microcomputer (IC601 on CV-8 board). This microcomputer reads the data written in the nonvolatile memory of the microcomputer and sends it to the EVR. The EVR D-A converts this data (8 bits for each adjustment point) and creates the adjustment voltage.
Thus, it is necessary to change the adjustment data contained in the nonvolatile memory when adjusting the camera block, and the adjustment memory is used for this purpose.
The adjustment remote controller performs bidirectional communications with the camera block microcomputer using the remote control signal lines (LINCS). Adjustment addresses and adjustment data increment/decrement commands are sent to the camera block microcomputer from the adjustment remote controller. Adjustment addresses and adjustment data are sent from the camera block microcomputer to the adjustment remote controller.

1. Use of adjustment remote controller

Solder the lead wire to Pin (B6) (refer to 7-1-5) of the check point array on the CV-8 board.

1) Connect the adjustment remote controller to the remote terminal (J951 on RC-29 board). (Set the HOLD switch of the adjustment remote controller to the HOLD position (SERVICE position).)
2) Turn on the power of the main unit.
3) Connect Pin (B6) ($\overline{\text{CAM ADJ}}$) of the check point array to GND using a jumper wire.
   (This connection causes the EVR/AWB microcomputer to cease normal remote control operation and to begin adjustment dedicated communications.)
   Note: Be sure to make this connection only after turning on the power. The following will be displayed on the LCD of the adjustment remote controller if the connection is normal. (Adjustment data varies according to the unit.)

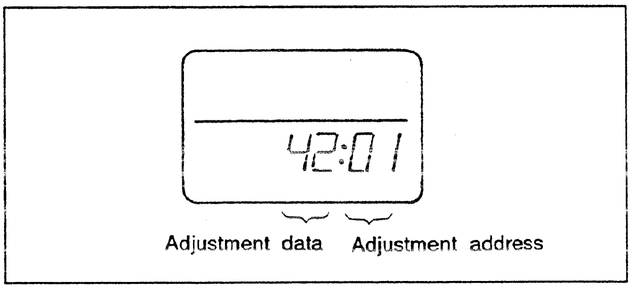


Fig. 7-7.

4) Designate the desired adjustment address using the adjustment remote controller. The adjustment address is incremented by pressing the FF (►►) button and decremented by pressing the REW (◄◄) button. (The adjustment address is indicated in decimal, and there are 89 addresses from 01 to 89. The adjustment address corresponds to the EVR (CV-8 board, IC608, IC609, IC804) output terminals. Refer to Table 7-3. for the adjustment contents of the various addresses.)

5) Perform adjustment by incrementing or decrementing the adjustment data.
The adjustment data is incremented by pressing the PLAY (►) button. The adjustment data is decremented by pressing the STOP (■) button.
   - The adjustment data is indicated in hexadecimal. There are 256 values from 00 to FF.

Hexadecimal	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
Indication on LCD	0	1	2	3	4	5	6	7	8	9	A	b	c	d	E	F
Decimal equivalent	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

Table 7-1.

   - The adjustment data corresponds to the EVR (CV-8 board, IC608, IC609, IC804) output voltage, and is as follows.

Adjustment data ( ) is decimal equivalent	EVR output voltage
FF (=255)	Maximum value (approx. 5 Vdc)
↑ F0 (=240)	↑
E0 (=224)	
D0 (=208)	
C0 (=192)	
B0 (=176)	
A0 (=160)	
90 (=144)	
80 (=128)	Center value (approx. 2.5 Vdc)
70 (=112)	
60 (=96)	
50 (=80)	
40 (=64)	
30 (=48)	
20 (=32)	
↓ 10 (=16)	↓
00 (=0)	Minimum value (approx. 0 Vdc)

Table 7-2.

6) The adjustment address is changed using the FF (►►) button or REW (◄◄) button to store the adjustment data in the nonvolatile memory of EVR/AWB microcomputer (IC601 on CV-8 board).
(The new adjustment data is not stored in the nonvolatile memory unless this operation is performed.)

2. Precautions on use of adjustment remote controller

It is possible to accidentally erase correct adjustment data due to an error in operation of the adjustment remote controller. In order to prevent this, we recommend that you make a note of all adjustment data before adjustment and record the new adjustment data after completing each adjustment item.

3. Adjustment address table

Adjustment Address	Adjustment Voltage Output Terminal	Adjustment Item	Remarks	Adjustment Data Memo Column
01	Pin ⑱ of IC609	DELTA R	Auto white balance adjustment	
02	Pin ⑲ of IC609	DELTA B		
03	Pin ② of IC609	TITLE PEDESTAL		
04	Pin ③ of IC609	C-PED	Fixed at "99"	99
05	Pin ④ of IC609	R-Y GAIN	Color reproduction (gain) adjustment	
06	Pin ⑤ of IC609	B-Y GAIN		
07	Pin ⑥ of IC609	B-Y HUE	Color reproduction (hue) adjustment	
08	Pin ⑦ of IC609	R-Y HUE		
09	Pin ⑧ of IC609	C LEVEL		
10	Pin ⑨ of IC609	Y GAIN		
11	Pin ⑫ of IC609	R GAIN	Pre-white balance adjustment	
12	Pin ⑬ of IC609	B GAIN		
13	Pin ⑱ of IC608	C2 GAIN	Chroma matrix adjustment	
14	Pin ⑲ of IC608	C1 GAIN		
15	Pin ② of IC608	Y1 GAIN	Y matrix adjustment	
16	Pin ③ of IC608	HUE CONT	Fixed at "AE"	AE
17	Pin ④ of IC608	WC	White clip adjustment	
18	Pin ⑤ of IC608	Y LEVEL		
19	Pin ⑥ of IC608	SET UP		
20	Pin ⑦ of IC608	SYNC LEVEL		
21	Pin ⑧ of IC608	APERTURE	Aperture adjustment	
22	Pin ⑨ of IC608	BURST LEVEL		
23		———		–
24	Pin ⑤ of IC804	CHARACTER		
25	Pin ⑱ of IC804	IRIS		
26	Pin ⑲ of IC804	FOCUS SPEED		
27	Pin ② of IC804	HALL OFFSET		
28	Pin ③ of IC804	MAX GAIN		
29	Pin ④ of IC804	TITLE A/D		
30		———		–
31	Pin ⑥ of IC804	V SUB		
32	Pin ⑦ of IC804	AGC		
33		———		–
34		———		–
35		———		–
36		———		–

Table 7-3. (1)

<table>
<tr><th>Adjustment Address</th><th>Adjustment Voltage Output Terminal</th><th>Adjustment Item</th><th>Remarks</th><th>Adjustment Data Memo Column</th></tr>
<tr><td>37</td><td></td><td>MODE</td><td>The following adjustment modes are selected by changing the adjustment data.
<table>
<tr><th>Adjustment data</th><th>Adjustment mode</th></tr>
<tr><td>00</td><td>Release</td></tr>
<tr><td>01</td><td>Focus hunching</td></tr>
<tr><td>03</td><td>Zoom position</td></tr>
<tr><td>05</td><td>Hall, iris close</td></tr>
<tr><td>07</td><td>Hall, iris open</td></tr>
<tr><td>09</td><td>Hall in/out threshold</td></tr>
<tr><td>0B</td><td>Auto-focus LLA</td></tr>
<tr><td>FD</td><td>Auto-focus filter fixed at FA</td></tr>
<tr><td>FF</td><td>Auto-focus filter fixed at FH</td></tr>
</table></td><td>00</td></tr>
<tr><td>38</td><td></td><td>LLA</td><td>Auto-focus LLA adjustment</td><td></td></tr>
<tr><td>39</td><td></td><td>MACRO</td><td></td><td></td></tr>
<tr><td>40</td><td></td><td>IN/OUT DOOR</td><td>Fixed at 00</td><td>00</td></tr>
<tr><td>41</td><td></td><td>LOW CONT</td><td>Auto-focus adjustment</td><td></td></tr>
<tr><td>42</td><td></td><td>BASE H</td><td>Auto-focus adjustment</td><td></td></tr>
<tr><td>43</td><td></td><td>STEPA</td><td>Fixed at 02</td><td>02</td></tr>
<tr><td>44</td><td></td><td>WIDE THR</td><td>Fixed at 15</td><td>15</td></tr>
<tr><td>45</td><td></td><td>Hysteresis</td><td></td><td></td></tr>
<tr><td>46</td><td></td><td>HALL LEVEL</td><td></td><td></td></tr>
<tr><td>47</td><td></td><td>THR SEARCH</td><td>Fixed at 06</td><td>06</td></tr>
<tr><td>48</td><td></td><td>FA BASE</td><td>Fixed at 28</td><td>28</td></tr>
<tr><td>49</td><td></td><td>KATAMUKI</td><td>Auto-focus adjustment</td><td></td></tr>
<tr><td>50</td><td></td><td>FH-NG-NG-THR</td><td>Fixed at 05</td><td>05</td></tr>
<tr><td>51</td><td></td><td>BACK RUSH</td><td>Fixed at 03</td><td>03</td></tr>
<tr><td>52</td><td></td><td>TOP CHECK SEARCH</td><td>Fixed at 02</td><td>02</td></tr>
<tr><td>53</td><td></td><td>TOP LIMIT</td><td>Fixed at 03</td><td>03</td></tr>
<tr><td>54</td><td></td><td>CHECK PLUS</td><td>Fixed at 50</td><td>50</td></tr>
<tr><td>55</td><td></td><td>MANU F SPEED</td><td>Fixed at 04</td><td>04</td></tr>
<tr><td>56</td><td></td><td>M12 THR</td><td>Fixed at C8</td><td>C8</td></tr>
<tr><td>57, 58</td><td></td><td>————</td><td>Not used</td><td>–</td></tr>
<tr><td>59</td><td></td><td>START R</td><td>Preset R CONT data for reset start</td><td>30</td></tr>
<tr><td>60</td><td></td><td>START B</td><td>Preset B CONT data for reset start</td><td>41</td></tr>
<tr><td>61</td><td></td><td>BTM SLP R</td><td>Fixed at 22</td><td>22</td></tr>
<tr><td>62</td><td></td><td>BTM SLP B</td><td>Fixed at 10</td><td>10</td></tr>
<tr><td>63</td><td></td><td>MDL SLP R</td><td>Fixed at 00</td><td>00</td></tr>
<tr><td>64</td><td></td><td>MDL SLP B</td><td>Fixed at 00</td><td>00</td></tr>
<tr><td>65</td><td></td><td>TOP SLP R</td><td rowspan="2">Auto white balance adjustment</td><td></td></tr>
<tr><td>66</td><td></td><td>TOP SLP B</td><td></td></tr>
<tr><td>67</td><td></td><td>KEIKO R</td><td>Fixed at 10</td><td>10</td></tr>
<tr><td>68</td><td></td><td>KEIKO B</td><td>Fixed at 00</td><td>00</td></tr>
<tr><td>69</td><td></td><td>BTM UP</td><td>Fixed at 89</td><td>89</td></tr>
<tr><td>70</td><td></td><td>BTM DWN</td><td>Fixed at 67</td><td>67</td></tr>
</table>

Table 7-3. (2)

<table>
<tr><th>Adjustment Address</th><th>Adjustment Voltage Output Terminal</th><th>Adjustment Item</th><th>Remarks</th><th>Adjustment Data Memo Column</th></tr>
<tr><td>71</td><td></td><td>MDL UP</td><td>Fixed at 7C</td><td>7C</td></tr>
<tr><td>72</td><td></td><td>MDL DWN</td><td>Fixed at 6A</td><td>6A</td></tr>
<tr><td>73</td><td></td><td>TOP UP</td><td rowspan="2">Auto white balance adjustment</td><td></td></tr>
<tr><td>74</td><td></td><td>TOP DWN</td><td></td></tr>
<tr><td>75</td><td></td><td>KEIKO DWN</td><td>Fixed at 8C</td><td>8C</td></tr>
<tr><td>76</td><td></td><td>R DWN LMT</td><td>Fixed at 1E</td><td>1E</td></tr>
<tr><td>77</td><td></td><td>B UP LMT</td><td rowspan="5">Auto white balance adjustment</td><td></td></tr>
<tr><td>78</td><td></td><td>R OUT LMT</td><td></td></tr>
<tr><td>79</td><td></td><td>B OUT LMT</td><td></td></tr>
<tr><td>80</td><td></td><td>R OUTDOOR</td><td></td></tr>
<tr><td>81</td><td></td><td>B OUTDOOR</td><td></td></tr>
<tr><td>82</td><td></td><td>AWB</td><td>Fixed at 23</td><td>23</td></tr>
<tr><td>83</td><td></td><td>DELAY TM</td><td>Auto white balance tracking speed. Fixed at 15</td><td>15</td></tr>
<tr><td>84</td><td></td><td>FAST TM</td><td>Fixed at 20</td><td>20</td></tr>
<tr><td>85</td><td></td><td>CAM DDS 0</td><td>Fixed at 00</td><td>00</td></tr>
<tr><td>86</td><td></td><td></td><td>Fixed at 00</td><td>00</td></tr>
<tr><td>87</td><td></td><td></td><td>Fixed at 00</td><td>00</td></tr>
<tr><td>88</td><td></td><td>CAM ALN</td><td>Fixed at 00</td><td>00</td></tr>
<tr><td>89</td><td></td><td>AWB mode</td><td>The following auto white balance adjustment modes are selected by changing the adjustment data.
<table>
<tr><th>Adjustment data</th><th>Adjustment mode</th></tr>
<tr><td>00</td><td>Release</td></tr>
<tr><td>10</td><td>White balance value output (within tracking zone)</td></tr>
<tr><td>E0</td><td>Auto white balance adjustment possible</td></tr>
<tr><td>F0</td><td>Auto white balance tracking zone evaluation invalid</td></tr>
</table></td><td>00</td></tr>
</table>

Table 7-3. (3)

7-1-5. Check Point Array

Almost all of the measurement points for camera block adjustment are located in the check point array on the CV-8 board. Solder short lead wires onto the terminals needed for adjustment and connect an oscilloscope, etc.

The terminal numbers and signal names for the check point array are shown in Table 7-4.

Terminal No.	Signal Name	Terminal No.	Signal Name
A1	G OUT	B1	N.C
A2	N.C	B2	N.C
A3	N.C	B3	Y(LPF)OUT
A4	Y0	B4	V SUB
A5	Y1	B5	AW ADJ
A6	C0	B6	$\overline{\text{CAM ADJ}}$
A7	C1	B7	MODE
A8	N.C	B8	VIDEO OUT
A9	YH	B9	SHUTTER EN
A10	N.C	B10	GND
A11	N.C	B11	CCD OUT

Table 7-4.

* N.C......no connection

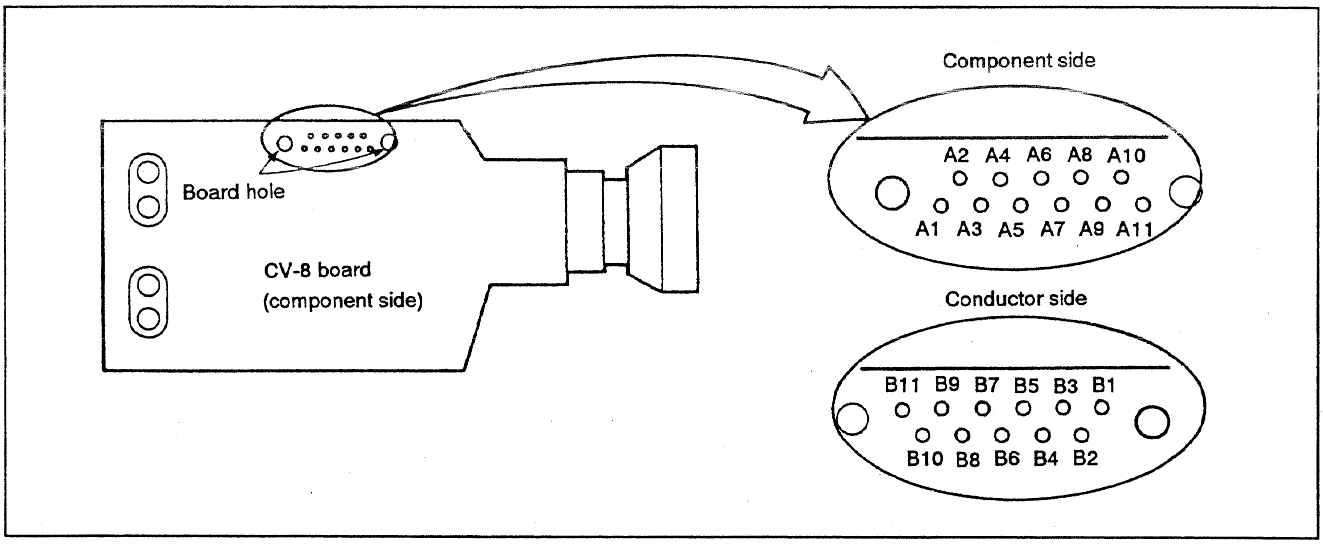

Component side
A2 A4 A6 A8 A10
A1 A3 A5 A7 A9 A11
Board hole
CV-8 board
(component side)
Conductor side
B11 B9 B7 B5 B3 B1
B10 B8 B6 B4 B2

Fig. 7-8.

7-1-6. AF Microcomputer Data Reading Jig

The AF microcomputer data reading jig converts the serial data (output data varies according to hall (iris) state, focus state, focus motor speed, zoom ring position, etc.) for adjustment output from the AF microcomputer (IC802 on CV-8 board) into a 2-digit hexadecimal code and displays it on the LED.

Connections:
Connect as shown in the diagram below.

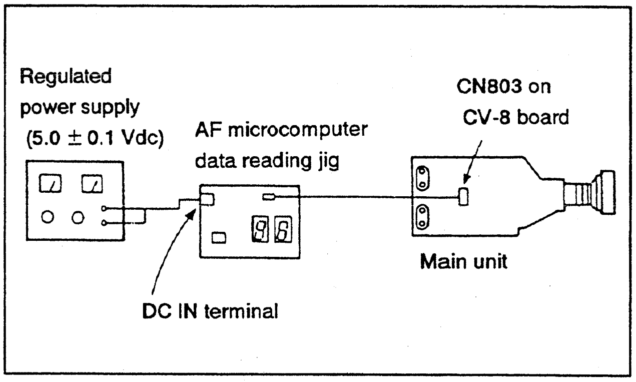

Regulated
power supply
(5.0 ± 0.1 Vdc)
AF microcomputer
data reading jig
CN803 on
CV-8 board
Main unit
DC IN terminal

Fig. 7-9.

7-1-7. Data Processing

For some of the adjustment items, calculation from the data (hexadecimal) indicated on the AF microcomputer data reading jig and adjustment remote controller is needed to obtain the adjustment data. In these cases, convert the hexadecimal values to decimal before calculation and reconvert the result to hexadecimal to obtain the adjustment data. A hexadecimal-decimal conversion table is shown in Table 7-5.

Hexadecimal-Decimal Conversion Table

Hexadecimal lower digit / Hexadecimal upper digit	0	1	2	3	4	5	6	7	8	9	A (A)	B (b)	C (c)	② D (d)	E (E)	F (F)
0	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
2	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47
3	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63
4	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79
5	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95
6	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111
7	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127
8	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143
9	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159
A(A)	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175
① B(b)	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191
C(c)	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207
D(d)	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223
E(E)	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239
F(F)	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255

Note: ( ) is the indication on the jig or adjustment remote commander.

Example: The indication on the jig or adjustment remote commander is BD (b d).
As the upper digit is B (b) and the lower digit is D (d), a decimal value of 189 is obtained from the intersection of ① and ② in the above table.

Table 7-5.

7-2. CAMERA SYSTEM ADJUSTMENT

7-2-1. Flange Back Adjustment

Subject	Siemens star (2m directly in front of lens reference ("⦶" marked)
Measurement Point	Check with a monitor TV
Measuring Instrument	
Adjustment Element	Flange back adjusting pin
Tools	Phillips screwdriver, flat blade (–) screwdriver

Adjustment method:

1) Press the FOCUS switch (S655 on CK-19 board) to set to the MANUAL mode.
2) Position a Siemens star 2m directly in front of the lens reference plane (See Fig. 7-2.).
3) Orient the camera block to have the center of the Siemens star imaged on the monitor TV screen coincide with the monitor screen center.
4) Check to assure the smooth motion of the lens zoom lever to both its extreme WIDE position (8.5 mm) and TELE position (68 mm), and then set it at the extreme WIDE position. (In this process, also check the monitor image to assure proper zooming operation.)
5) Select adjustment address 37 with the adjustment remote controller and enter adjustment data of 07. (Iris open mode) At this time, adjust the illumination on the Siemens star or place an ND filter over the lens, and confirm that the proper image is displayed on the monitor TV screen.
6) Set the lens focusing mark at the center of "2".

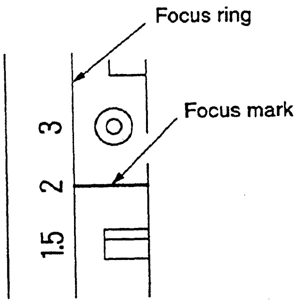


Fig. 7-10.

7) Open the DK-4 board and loosen flange back setscrew ❶ with a Phillips screwdriver. (See Fig. 7-12.)
8) By turning the flange back adjusting pin ❷ while watching the monitor screen, attain the optimum definition of a wedge at the Siemens star center on the screen. (Turn it a few turns to the left and right to ensure optimum definition.)
   Note: Do not turn the adjusting pin excessively in either direction.
9) While holding the flange back adjusting pin ❷ to prevent further rotation, retighten the flange back setscrew ❶
10) With the zoom lever fixed at its WIDE end, turn the focusing ring and set it to the position that provides the optimum definition image of the wedge. Check to assure the focusing mark position is within the range shown in Fig. 7-11. Also, rotate the focusing ring to the close (1.3m) and far (∞) extremes and confirm that the wedge is no longer in focus.

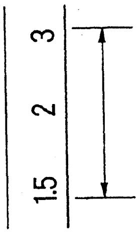


Fig. 7-11.

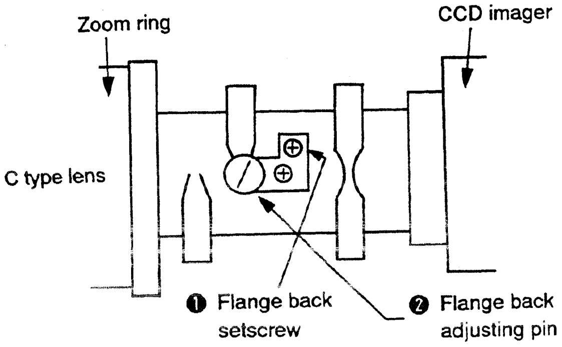


Fig. 7-12.

11) Fix the zoom lever at the extreme TELE position.
12) Turn the focusing ring and stop at the position where the wedge has optimum definition.
    Confirm that the focus mark is within ± 1.5 mm of "2".
13) Select adjustment address 37 with the adjustment remote controller and enter adjustment data of 00. (Iris normal)
14) Change the adjustment address to store the adjustment data in the memory.

7-2-2. 15V Power Supply Adjustment (PS-225 Board)

Measurement Point	Pin ② of W902
Measuring Instrument	Digital voltmeter
Adjustment Element	RV937
Specified Value	15.0 ± 0.5 Vdc

Adjustment method:

1) Adjust to 15.0 ± 0.5 Vdc with RV937.

7-2-3. Power Supply Check (PS-225 Board)

Measuring Instrument	Digital voltmeter
CAM 5V Check	
Measurment Point	Pin ④ of W902
Specified Value	5.05 ± 0.2 Vdc
32V Check	
Measurement Point	Pin ① of W902
Specified Value	32 ± 2 Vdc

Checking method:

1) Each power supply voltage should be at its specified level.

7-2-4. EVR Initial Settings

Set to the following initial settings of the adjustment data only when the EVR/AWB microcomputer (IC602 on CV-8 board) was replaced.

Adjustment Address	Adjustment Data Initial Value	Adjustment Address	Adjustment Data Initial Value	Adjustment Address	Adjustment Data Initial Value
01 (DELTA R)	50	44 (WIDE THR)	15	67 (KEIKO R)	10
02 (DELTA B)	50	47 (THR SEARCH)	06	68 (KEIKO B)	00
04 (C-PED)	99	48 (FA BASE)	28	69 (BTM UP)	89
16 (HUE CONT)	AE	49 (KATAMUKI)	06	70 (BTM DWN)	67
17 (WHITE CLIP)	FF	50 (FH-NG-NG-THR)	05	71 (MDL UP)	7C
18 (Y LEVEL)	40	51 (BACK RUSH)	03	72 (MDL DWN)	6A
25 (IRIS)	80	52 (TOP CHECK-SEARCH)	02	75 (KEIKO DWN)	8C
28 (MAX GAIN)	B0	53 (TOP LIMIT)	03	76 (R DWN LMT)	1E
31 (V SUB)	80	54 (CHECK-PLUS)	50	78 (R OUT LMT)	2D
32 (AGC)	FF	55 (MANU-F-SPEED)	04	82 (AWB)	23
37 (MODE)	00	56 (M12-THR)	C8	83 (D TM)	15
38 (LLA)	3F	59 (START R)	30	84 (F TM)	20
39 (MACRO)	00	60 (START B)	41	85 (CAM DDS O)	00
40 (IN/OUT DOOR)	00	61 (BTM SLP R)	22	86	00
41 (LOW CONT)	03	62 (BTM SLP B)	10	87	00
42 (BASE H)	03	63 (MDL SLP R)	00	88 (CAM ALN)	00
43 (STEPA)	02	64 (MDL SLP B)	00	89 (AWB MODE)	00

Table 7-6.

Adjustment method:

1) Set the adjustment data at the various adjustment addresses to the initial values using the adjustment remote controller.
2) Change the adjustment address to store the last adjustment data in the memory.

7-2-5. V SUB Adjustment (CV-8 Board)

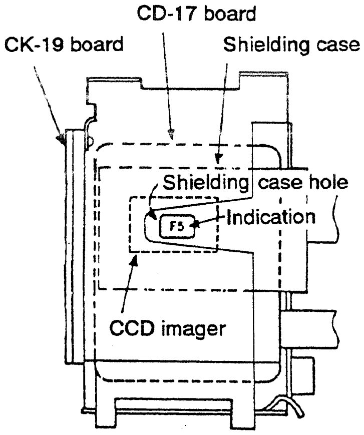
Subject	Not needed
Measurement Point	Pin (B4) (V SUB) of check point array
Measuring Instrument	Digital voltmeter
Adjustment Address	31 (V SUB)
Specified Value	(Voltage indicated by the imager) ± 0.05 Vdc

Adjustment method:

1) Set the adjustment address to 31 using the adjustment remote controller.
2) Change the adjustment data using the adjustment remote controller to set the VSUB voltage (Voltage indicated by the imager) to ± 0.05 Vdc.
3) Change the adjustment address to store the adjustment data in the memory.

Note: The VSUB specified voltage is expressed by two digits with the integer section abbreviation and decimal section by the imager.

Integer section abbreviation	Integer value
1	1
:	:
9	9
A	10
B	11
C	12
D	13
E	14
F	15
G	16
H	17
I	18
J	19
K	20
L	21



(Example)
If F5 is indicated, the integer value is F → 15 and decimal value is 5 → 0.5. Thus, the VSUB voltage is 15 + 0.5 = 15.5 (Vdc).

Fig. 7-13.

7-2-6. Hall Adjustment (CV-8 Board)

Subject	All black (cover lens with black cap)
Measurement Point	CN803
Measuring Instrument	AF microcomputer data reading jig
Adjustment Element	RV801
Adjustment Address	27 (Hall Offset)
Specified Value	When iris closed: Minimum value of 01 to 04 When iris open: 3D or 3E

Adjustment method:

1) Set the adjustment address to 37 with the adjustment remote controller, and set the adjustment data to 05. (Setting when iris closed)
2) Change the adjustment address to 27.
3) Change the adjustment data until the indication on the AF microcomputer data reading jig is the minimum value in the range of 01 to 04. (Hall offset adjustment)
4) Change the adjustment address to 37 and set the adjustment data to 07. (Setting when iris open)
5) Adjust RV801 until the indication on the AF microcomputer data reading jig is either 3D or 3E. (3D is indicated as 3d .)
6) Repeat steps 1) through 5) until the specified values are satisfied.
7) Set the adjustment address to 37 and set the adjustment data to 00. (Releases adjustment mode)
8) Change the adjustment address to store the adjustment data in the memory.

7-2-7. Iris Adjustment (CV-8 Board)

Subject	Color bar chart standard picture frame
Filter	ND filter 0.4 and 0.1
Measurement Point	Pin ⒷⒾⒾ (CCD OUT) of check point array
Measuring Instrument	Oscilloscope
Adjustment Address	25 (Iris)
Specified Value	360 ± 20 mVp-p

Adjustment method:

1) Set the adjustment address to 25 with the adjustment remote controller.
2) Without attaching an ND filter, change the adjustment data with the adjustment remote controller to set the CCD OUT signal level to 360 ± 20 mVp-p.
3) Attach the ND filter 0.5 (0.4 ± 0.1) to the front of the lens and confirm that there is a smooth change in the signal level.
4) Remove the ND filter and confirm that the signal level is 360 ± 20 mVp-p.
5) Repeat 2) through 4) if the specified value is not met.
6) Change the adjustment address to store the adjustment data in the memory.

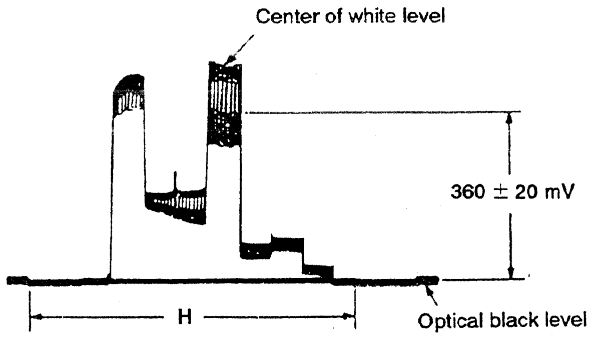


Fig. 7-14.

7-2-8. Iris In/Out Adjustment (CV-8 Board)

Subject	White pattern standard picture frame
Filter	ND filter 0.4 (two) and 0.1 (one)
Measurement Point	CN803
Measuring Instrument	AF microcomputer data reading jig
Adjustment Address	46 (hall level) 45 (hysteresis)

Adjustment method:

1) Cover the lens with the ND filter 0.8 (0.4+0.4).
2) Set the adjustment address to 37 with the adjustment remote controller and set the adjustment data to 09. (Hall in/out threshold mode setting)
3) Read the data indicated on the AF microcomputer data reading jig. This data will be a.
4) Change the adjustment address to 46 and enter a as the adjustment data.
5) Remove the ND filter 0.8 and replace it with ND filter 0.5 (0.4+0.1).
6) Read the data indicated on the AF microcomputer data reading jig. This data will be b.
7) Subtract data b from data a to obtain data c.
   (Refer to Table 7-5. Hexadecimal-Decimal Conversion Table)
   (Example)
   If a=1A and b=15, c=a−b =1A(26) − 15(21) =05
   ( ) indicates decimal value
8) Obtain the hysteresis data from data c using the table below.

Data c	Hysteresis Data
02, 03	01
04, 05, 06	02
07, 08, 09	03

   (Example)
   The hysteresis data is 02 if c=05.
9) Change the adjustment address to 45 and enter the hysteresis data as the adjustment data.
10) Change the adjustment address to 37 and set the adjustment data to 00.
   (Releases hall in/out threshold mode)
11) Change the adjustment address to store the adjustment data in the memory.

7-2-9. AGC Adjustment (CV-8 Board)

Subject	Color bar chart standard picture frame
Measurement Point	Pin (B3) (Y (LPF) OUT) of check point array
Measuring Instrument	Oscilloscope
Adjustment Address	32 (AGC)
Specified Value	160 ± 5 mVp-p

Adjustment method:

1) Set the adjustment address to 32 using the adjustment remote controller.
2) Change the adjustment data with the adjustment remote controller to set the Y (LPF) signal level to 160 ± 5 mVp-p.
3) Change the adjustment address to store the adjustment data in the memory.

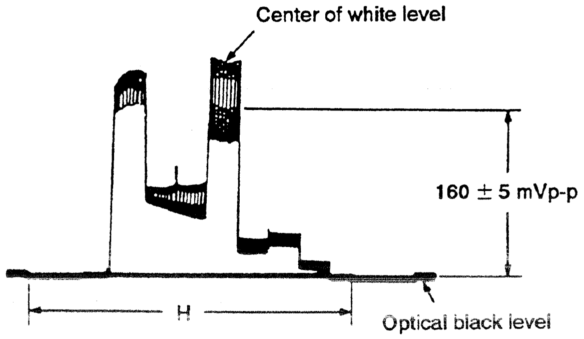


Fig. 7-15.

7-2-10. Y Signal Matrix Adjustment (CV-8 Board)

Subject	Color bar standard picture frame
Measurement Point	1: Pin (A4) (Y0) of check point array 2: Pin (A5) (Y1) of check point array
Measuring Instrument	Oscilloscope
Adjustment Address	15 (Y1 GAIN)
Specified Value	Y1 signal level=Y0 signal level

Adjustment method:

1) Connect the oscilloscope to Pin (A4) of the check point array and measure the Y0 signal level.
2) Connect the oscilloscope to Pin (A5) of the check point array.
3) Set the adjustment address to 15 using the adjustment remote controller.
4) Change the adjustment data until the Y1 signal level is the same as the Y0 signal level measured in 1).
5) Change the adjustment address to store the adjustment data in the memory.

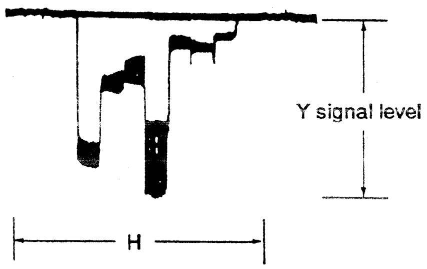


Fig. 7,16.

7-2-11. Chroma Signal Matrix Adjustment (1) (CV-8 Board)

Subject	Color bar standard picture frame
Measurement Point	1: Pin A6 (C0) of check point array 2: Pin A7 (C1) of check point array
Measuring Instrument	Oscilloscope
Adjustment Address	14 (C1 GAIN)
Specified Value	C1 signal level=C0 signal level

Adjustment method:

1) Connect the oscilloscope to Pin A6 of the check point array and measure the C0 signal level. (The C0 signal level is the larger of the CR and CB signal levels.)
2) Connect the oscilloscope to Pin A7 of the check point array.
3) Set the adjustment address to 14 using the adjustment remote controller.
4) Change the adjustment data until the C1 signal level is the same as the C0 signal level measured in 1).
5) Change the adjustment address to store the adjustment data in the memory.

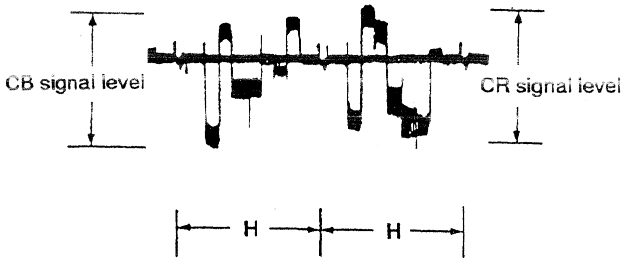


Fig. 7-17. C0 and C1 Signal Levels

7-2-12. Chroma Signal Matrix Adjustment (2) (CV-8 Board)

Subject	Color bar standard picture frame
Measurement Point	CH1 (X): emitter of Q642 (B-Y) CH2 (Y): emitter of Q614 (R-Y)
Measuring Instrument	Oscilloscope (X-Y mode)
Adjustment Address	13 (C2 GAIN)
Specified Value	Separate color luminance points become one.

Note: Adjustment can be made in the same manner using a vectorscope.
(Vectorscope connection terminal: video output terminal)

Adjustment method:

1) Set the adjustment address to 13 using the adjustment remote controller.
2) Change the adjustment data so that the two separate color luminance points become one respectively.
3) Change the adjustment address to store the adjustment data in the memory.

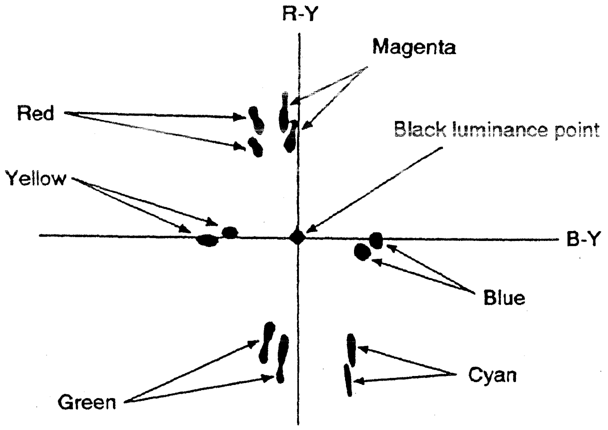


Fig. 7-18.

7-2-13. YH Level Adjustment (CV-8 Board)

Subject	Color bar chart standard picture frame
Measurement Point	Pin (A9) (YH) of check point array
Measuring Instrument	Oscilloscope
Adjustment Address	10 (Y GAIN)
Specified Value	900 ± 40 mVp-p

Adjustment method:

1) Set the adjustment address to 10 with the adjustment remote controller.
2) Change the adjustment data with the adjustment remote controller to set the YH signal level to 900 ± 40 mVp-p.
3) Change the adjustment address to store the adjustment data in the memory.

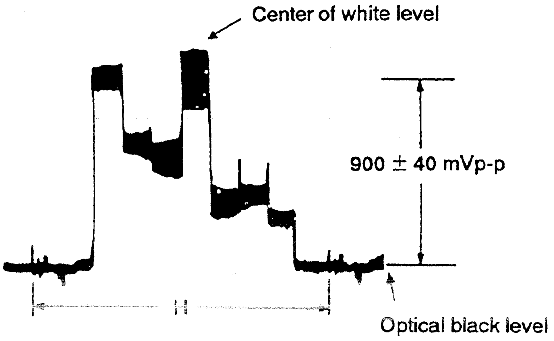


Fig. 7-19.

7-2-14. Sync Level Adjustment (CV-8 Board)

Subject	All black (cover lens with black cap)
Measurement Point	Pin (B8) (VIDEO OUT) of check point array
Measuring Instrument	Oscilloscope
Adjustment Address	20 (SYNC LEVEL)
Specified Value	140 ± 5 mVp-p

Adjustment method:

1) Set the adjustment address to 20 with the adjustment remote controller.
2) Change the adjustment data with the adjustment remote controller to set the sync level to 140 ± 5 mVp-p.
3) Change the adjustment address to store the adjustment data in the memory.

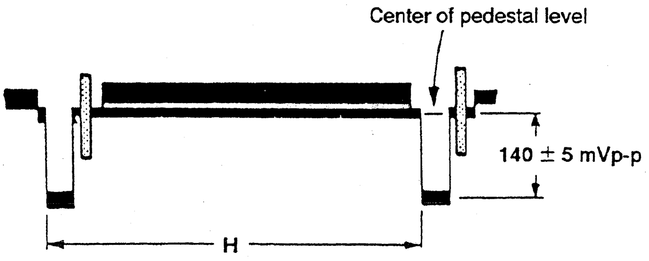


Fig. 7-20.

7-2-15. Setup Adjustment (CV-8 Board)

Subject	All black (cover lens with black cap)
Measurement Point	Pin (B8) (VIDEO OUT) of check point array
Measuring Instrument	Oscilloscope
Adjustment Address	19 (SET UP)
Specified Value	20 ± 5 mV

Note: 1) and 2) are steps taken to reduce noise.

Adjustment method:

1) Set the address to 21 (APERTURE) with the adjustment remote controller, and enter 00 as the adjustment data after making a note of the adjustment data for this at address.
2) Set the address to 28 (MAX GAIN) with the adjustment remote controller, and enter 00 as the adjustment data after making a note of the adjustment data for this address.
3) Set the adjustment address to 19 with the adjustment remote controller.
4) Change the adjustment data with the adjustment remote controller to set the setup level to 20 ± 5 mV.
5) Set the adjustment address to 21 and enter the adjustment data recorded in 1).
6) Set the adjustment address to 28 and enter the adjustment data recorded in 2).
7) Change the adjustment address to store the adjustment data in the memory.

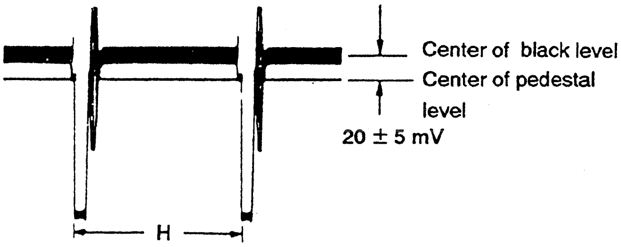


Fig. 7-21.

7-2-16. Y Level Adjustment (CV-8 Board)

Subject	Color bar chart standard picture frame
Measurement Point	Pin (B8) (VIDEO OUT) of check point array
Measuring Instrument	Oscilloscope
Adjustment Address	18 (Y LEVEL)
Specified Value	330 ± 10 mV

Adjustment method:

1) Set the adjustment address to 17 with the adjustment remote controller, and make a note of the adjustment data for this address.
2) Set the adjustment data to FF with the adjustment remote controller.
3) Set the adjustment address to 18 with the adjustment remote controller.
4) Change the adjustment data with the adjustment remote controller to set the Y signal level to 330 ± 10 mV.
5) Set the adjustment address to 17 and enter the adjustment data recorded in 1).
6) Change the adjustment address to store the adjustment data in the memory.

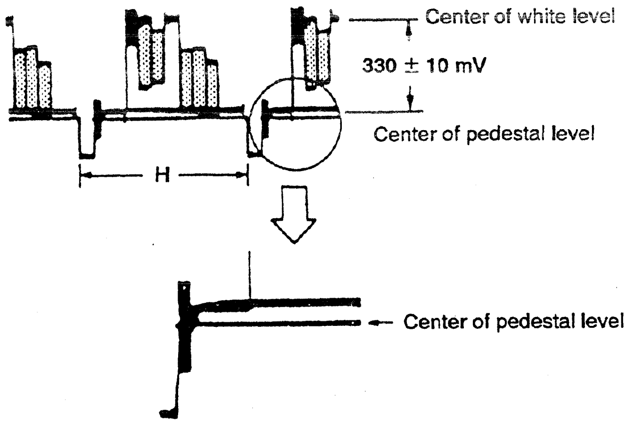


Fig. 7-22.

7-2-17. White Clip Adjustment (CV-8 Board)

Subject	High luminance pattern
Measurement Point	Pin (B8) (VIDEO OUT) of check point array
Measuring Instrument	Oscilloscope
Adjustment Address	17 (WHITE CLIP)
Specified Value	420 ± 10 mV

Adjustment method:

1) Set the adjustment address to 18 with the adjustment remote controller, and make a note of the adjustment data for this adress.
2) Set the adjustment data to 40 with the adjustment remote controller.
3) Set the adjustment address to 17 with the adjustment remote controller.
4) Change the adjustment data with the adjustment remote controller to set the white clip level to 420 ± 10 mV.
5) Set the adjustment address to 18 and enter the adjustment data recorded in 1).
6) Change the adjustment address to store the adjustment data in the memory.

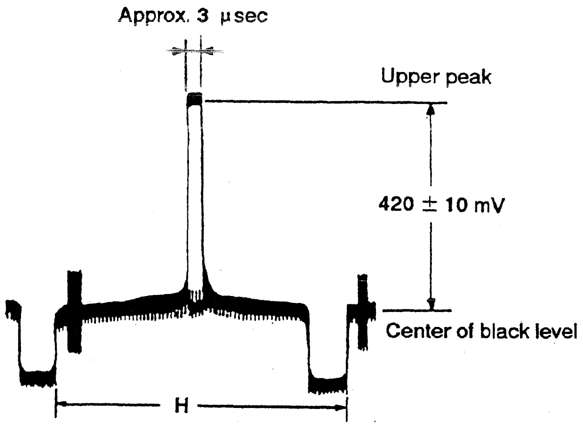


Fig. 7-23.

7-2-18. Aperture Adjustment (CV-8 Board)

Subject	Color bar chart standard picture frame
Measurement Point	Emitter of Q602
Measuring Instrument	Oscilloscope
Adjustment Address	21 (APERTURE)
Specified Value	40 ± 5 mV

Adjustment method:

1) Focus the camera and set the aperture level (lower peak between green and white) to maximum.
2) Change the adjustment data to set the lower peak between green and white to 40 ± 5 mV.
3) Change the adjustment address to store the adjustment data in the memory.

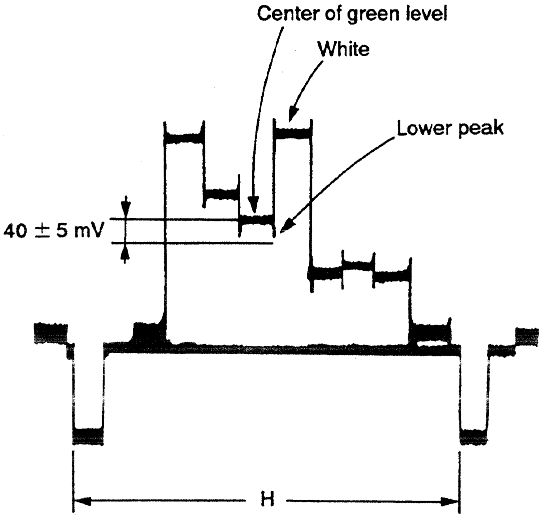


Fig. 7-24.

7-2-19. Max. Gain Adjustment (CV-8 Board)

Subject	Color bar chart standard picture frame
Filter	ND filters 1.0 (two) and 0.4 (one)
Measurement Point	Pin (B8) (VIDEO OUT) of check point array
Measuring Instrument	Oscilloscope
Adjustment Address	28 (MAX GAIN)
Specified Value	170 ± 10 mV

Adjustment method:

1) Cover the lens with the ND filter 2.4 (1.0 + 1.0 + 0.4).
2) Set the adjustment address to 28 with the adjustment remote controller.
3) Change the adjustment data with the adjustment remote controller to set the Y signal level to 170 ± 10 mV.
4) Change the adjustment address to store the adjustment data in the memory.

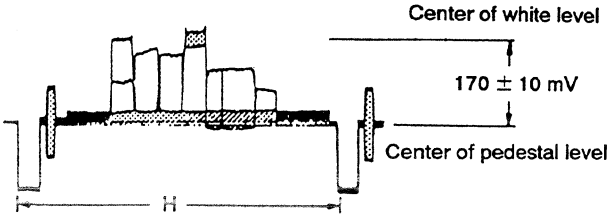


Fig. 7-25.

7-2-20. Chroma Level Adjustment (CV-8 Board)

Subject	Color bar chart standard picture frame
Measurement Point	Pin (A1) (G OUT) of check point array
Measuring Instrument	Oscilloscope
Adjustment Address	09 (C LEVEL)
Specified Value	400 ± 20 mVp-p

Connections:

1) Connect Pin (B7) (MODE) of the check point array to GND using a jumper wire.

Adjustment method:

1) Set the adjustment address to 09 with the adjustment remote controller.
2) Change the adjustment data with the adjustment remote controller to set the G OUT signal level to 400 ± 20 mVp-p.
3) Change the adjustment address to store the adjustment data in the memory.

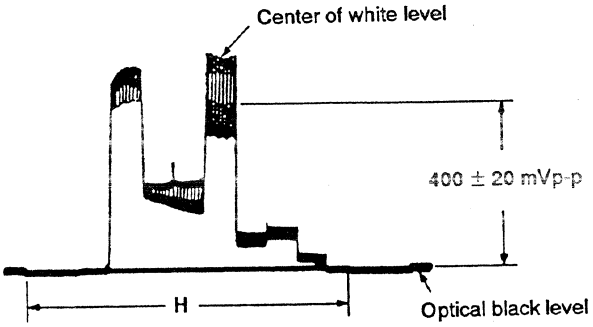


Fig. 7-26.

7-2-21. Burst Level Adjustment (CV-8 Board)

Subject	All black (cover lens with black cap)
Measurement Point	Pin (B8) (VIDEO OUT) of check point array
Measuring Instrument	Oscilloscope
Adjustment Address	22 (BURST LEVEL)
Specified Value	140 ± 5 mVp-p

Adjustment method:

1) Set the adjustment address to 22 with the adjustment remote controller.
2) Change the adjustment data with the adjustment remote controller to set the burst level to 140 ± 5 mVp-p.
3) Change the adjustment address to store the adjustment data in the memory.

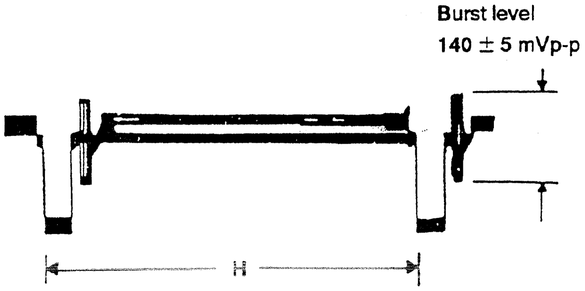


Fig. 7-27.

7-2-22. Indoor White Balance Adjustment (Method using vectorscope)

Subject	Color bar chart standard picture frame
Measurement Point	Video output terminals
Measuring Instrument	Vectorscope
Adjustment Address	11 (R GAIN) 12 (B GAIN)
Specified Value	The white luminance point is within a circle with a diameter of 1 mm centered around the origin.

Adjustment method:

1) Set the adjustment address to 11 with the adjustment remote controller.
2) Change the adjustment data with the adjustment remote controller to move the white luminance point to the origin point.
3) Set the adjustment address to 12.
4) Change the adjustment data to move the white luminance point to the origin point.
5) Repeat steps 1) through 4).
6) Change the adjustment address to store the adjustment data in the memory.

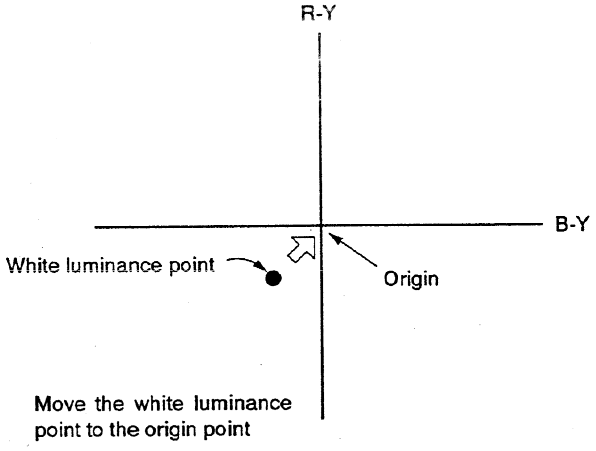

R-Y
B-Y
White luminance point
Origin
Move the white luminance point to the origin point

Fig. 7-28.

7-2-23. Indoor White Balance Adjustment (Method using oscilloscope) (CV-8 Board)

Subject	Color bar chart standard picture frame
Measurement Point	CH1 (X): emitter of Q642 (B-Y) CH2 (Y): emitter of Q614 (R-Y)
Measuring Instrument	Oscilloscope (X-Y mode)
Adjustment Address	11 (R GAIN) 12 (B GAIN)
Specified Value	Move the white luminance point to the black luminance point.

Adjustment method:

1) Set the adjustment address to 11 with the adjustment remote controller.
2) Change the adjustment data with the adjustment remote controller to move the white luminance point to the black luminance point.
3) Set the adjustment address to 12.
4) Change the adjustment data to move the white luminance point to the black luminance point.
5) Repeat steps 1) through 4).
6) Change the adjustment address to store the adjustment data in the memory.

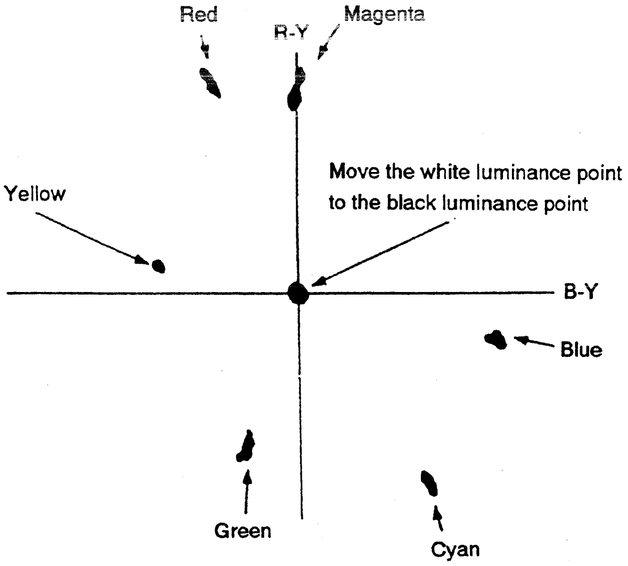

Red
R-Y
Magenta
Yellow
Move the white luminance point to the black luminance point
B-Y
Blue
Green
Cyan

Fig. 7-29.

7-2-24. Color Reproduction Adjustment (Method Using Vectorscope)

Subject	Color bar chart standard picture frame
Measurement Point	Video output terminals
Measuring Instrument	Vectorscope
Adjustment Address	05 (R-Y GAIN) 06 (B-Y GAIN) 07 (B-Y HUE) 08 (R-Y HUE)
Specified Value	All color luminance points are within color reproduction frame.

Note: Confirm that Burst Level Adjustment and Indoor White Balance Adjustment have been completed.

Adjustment method:

1) Adjust the phase and gain of the vectorscope to set the burst luminance points to the designated position on the color reproduction frame.
2) Change the adjustment data at the various adjustment addresses using the adjustment remote controller until all color luminance points are within the color reproduction frame.
3) Change the adjustment address to store the adjustment data in the memory.

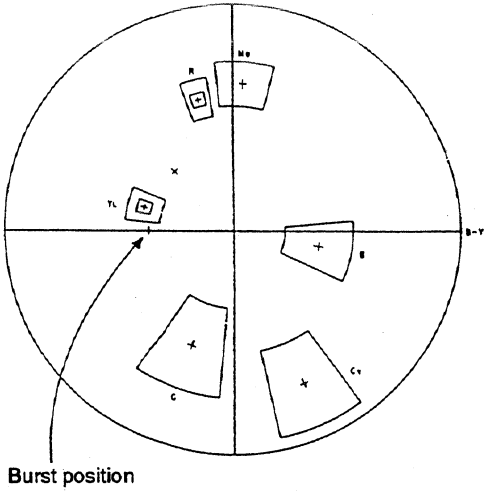


Fig. 7-30.

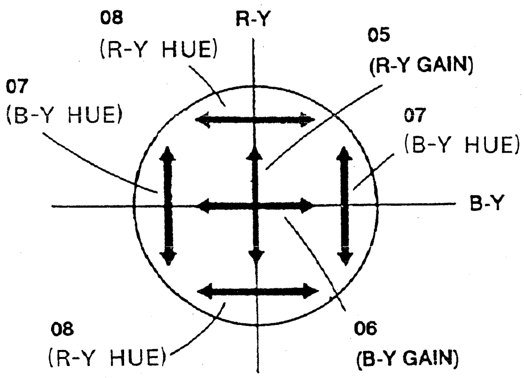


Fig. 7-31. Adjustment Address and Direction of Luminance Point Movement

7-2-25. Color Reproduction Adjustment (Method Using Oscilloscope)

1. Gain adjustment (CV-8 board)

Subject	Color bar chart standard picture frame
Measurement Point	Pin (B8) (VIDEO OUT) of check point array
Measuring Instrument	Oscilloscope
Adjustment Address	05 (R-Y GAIN) 06 (B-Y GAIN)
Specified Value	Red level: 227 ± 15 mVp-p Yellow level: 151 ± 12 mVp-p

Note: Confirm that Indoor White Balance Adjustment has been completed.

Adjustment method:

1) Set the adjustment address to 06 with the adjustment remote controller and set the adjustment data to B0.
2) Set the adjustment address to 07 and set the adjustment data to B0.
3) Set the adjustment address to 08 and set the adjustment data to B0.
4) Set the adjustment address to 05 and change the adjustment data to set the chroma signal red level to 227 ± 15 mVp-p.
5) Set the adjustment address to 06 and change the adjustment data to set the chroma signal yellow level to 151 ± 12 mVp-p.
6) Repeat steps 4) and 5).
7) Change the adjustment address to store the adjustment data in the memory.
8) Perform Hue Adjustment.

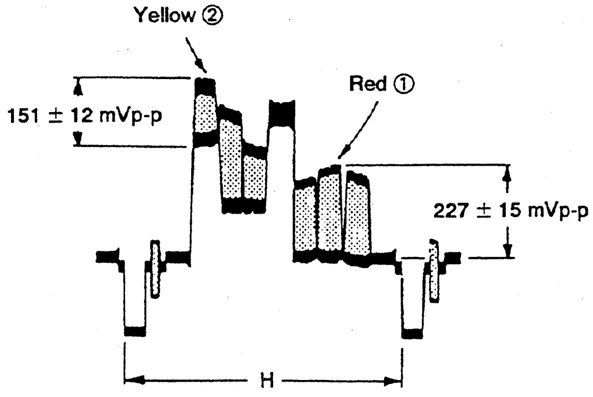


Fig. 7-32.

2. Hue adjustment

Subject	Color bar chart standard picture frame
Measurement Point	CH1 (X): emitter of Q642 (B-Y) CH2 (Y): emitter of Q614 (R-Y)
Measuring Instrument	Oscilloscope (X-Y mode)
Adjustment Address	07 (B-Y HUE) 08 (R-Y HUE)
Specified Value	Various color luminance points within color reproduction frame.

Note: Make sure that Indoor White Balance Adjustment has been completed.

Adjustment method:

1) Move the black luminance point on the oscilloscope to the origin point of the color reproduction frame.
2) Change the adjustment data at adjustment addresses 07 and 08 with the adjustment remote controller to bring the various color luminance points into the color reproduction frame.
3) Check the hue reproduced on the monitor TV and fine adjust the adjustment data at adjustment addresses 07 and 08 if necessary.
4) Change the adjustment address to store the adjustment data in the memory.

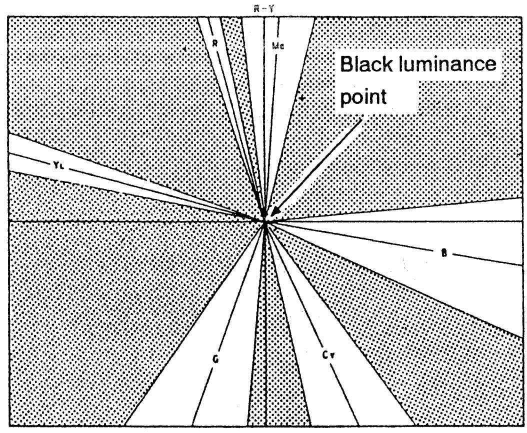


Fig. 7-33.

7-2-26. Auto White Balance Adjustment

Note: Be sure to first perform Preset Adjustment followed by Auto White Balance Adjustment.

1. Preset adjustment (CV-8 Board)

Subject	1. Color bar standard picture frame 2. White pattern standard picture frame
Measurement Point	Pin (B3) (Y LPF OUT) of check point array
Measuring Instrument	Oscilloscope

Note: 1) Perform preset adjustment after supplying power to the unit for at least 30 seconds.
2) When performing preset adjustment again, repeat after first turning the power off and then back on.

Preparations:

1) Prepare a 1 kΩ resistor for connecting Pin (B5) (AWB ADJ) of the check point array and Pin ④ (CAM 5V) of W902.

Adjustment method:

1) Turn the power OFF and then ON.
2) Set the subject to the color bar chart standard picture frame.
3) Select adjustment address 32 (AGC) with the adjustment remote controller and make a note of the adjustment data at this address.
4) Change the adjustment data with the adjustment remote controller to set the signal level to 220 ± 10 mV.
5) Change the subject to the white pattern standard picture frame.
6) Select adjustment address 89 (AWB MODE) and set the adjustment data to E0.
7) Change the adjustment address to store the adjustment data in the memory. Wait at least five seconds.
8) Remove the jumper wire between Pin (B6) (CAM ADJ) of the check point array and GND.
9) Connect Pin (B5) (AWB ADJ) of the check point array and Pin ④ of W902 (CAM 5V)with a 1 kΩ resistor.
10) Connect Pin (B6) (CAM ADJ) of the check point array to GND using a jumper wire.
Confirm that the indication (adjustment address 01) of the adjustment remote controller is changed.
11) Remove the jumper wire connected to Pin (B6) (CAM ADJ) of the check point array after allowing one second or more to elapse.
12) Remove the 1 kΩ resistor connected to Pin (B5) (AWB ADJ) of the check point array.
13) Connect Pin (B6) (CAM ADJ) of the check point array to GND using a jumper wire.
14) Select adjustment address 32 using the adjustment remote controller and enter the adjustment data recorded in 3).
15) Change the adjustment address to store the adjustment data in the memory.

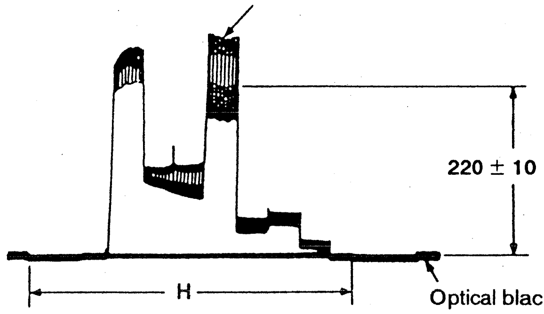


Fig. 7-34.

2. Auto White Balance Adjustment (CV-8 Board)

Note: Be sure to perform this adjustment after completing Preset Adjustment.

Subject	White pattern standard picture frame
Filter	Filter C14 (C12+C2) for black temperature correction
Measuring Instrument	Oscilloscope (X–Y Mode)
Measurement Point	CH1 (X): emitter of Q642 (B-Y) CH2 (Y): emitter of Q614 (R-Y)
Adjustment Address	01 (DELTA R) 02 (DELTA B) 80 (R OUTDOOR) 81 (B OUTDOOR) 77 (B UP LIMIT) 79 (B OUT LIMIT) 65 (TOP SLP R) 66 (TOP SLP R) 73 (TOP UP) 74 (TOP DWN) 78 (R OUT LMT)
Specified Value	Line up the white luminance point with the black luminance point.

Note: 1) Make connection to the video output terminals when the vectorscope is used.
2) All calculations in this section are made in decimal.

Adjustment method:

1) Select adjustment address 89 (AWB MODE) with the adjustment remote controller and enter adjustment data of 10. And cover the lens with the filter C14.
2) Change the adjustment data of adjustment addresses 01 and 02 with the adjustment remote controller to move the white luminance point to the black luminance point.
(Move the white luminance point to the origin point when using the vectorscope.)
The adjustment data of adjustment address 01 is D_1 and the adjustment data of adjustment address 02 is D_2.
3) Select adjustment address 80 and enter adjustment data D_1+1. Select adjustment address 81 and enter adjustment data D_2+3. (Outdoor white balance adjustment.)
4) Convert adjustment data D_1 to decimal to obtain D_1'.
Convert adjustment data D_2 to decimal to obtain D_2'.
(See Table 7-5 Hexadecimal-Decimal Conversion Table)
5) Obtain D_{77}' by the following formula.
$D_{77}'=(D_2' \times 1.9)-43.2$
6) Convert D_{77}' to hexadecimal and call this value D_{77}.
(Round off the decimal portion)
7) Select adjustment address 77 with the adjustment remote controller and enter adjustment data D_{77}.
Enter adjustment data D_1 to adjustment address 78.
8) Obtain D_{79}' by the following formula.
$D_{79}'=D_2'+10$
9) Convert D_{79}' to hexadecimal and call this value D_{79}.
10) Select adjustment address 79 with the adjustment remote controller and enter adjustment data D_{79}.
11) Obtain d' by the following formula.
$d'=(D_1' \times 5)+D_2'$
The adjustment procedure in 12) through 14) varies according to the value of d'.

[d' > 308]

12) Obtain D_{73}' and D_{74}' by the following formulas.
$D_{73}'=(D_1' \times 3)+(D_2' \div 2)+30$
$D_{74}'=D_{73}'-42$
13) Convert D_{73}' and D_{74}' to hexadecimal and call these values D_{73} and D_{74}.
(Round off the decimal portion)
14) Use the adjustment remote controller to enter the adjustment data shown in the table below for the indicated adjustment addresses.

Adjustment address	Adjustment data
65	20
66	01
73	D_{73}
74	D_{74}

Perform the adjustment steps beginning from 15).

[308 ≥ d' ≥ 286]

12) Obtain D_{73}' and D_{74}' by the following formulas.
$D_{73}'=(d' \div 2)+25$
$D_{74}'=D_{73}'-39$
13) Convert D_{73}' and D_{74}' to hexadecimal and call these values D_{73} and D_{74}.
(Round off the decimal portion)
14) Use the adjustment remote controller to enter the adjustment data shown in the table below for the indicated adjustment addresses.

Adjustment address	Adjustment data
65	41
66	01
73	D_{73}
74	D_{74}

Perform the adjustment steps beginning from 15).

[286 > d']

12) Obtain D_{73}' and D_{74}' by the following formulas.
$D_{73}'=(D_1' \times 3) + D_2'+30$
$D_{74}'=D_{73}'-42$
13) Convert D_{73}' and D_{74}' to hexadecimal and call these values D_{73} and D_{74}. (Round off the decimal portion)
14) Use the adjustment remote controller to enter the adjustment data shown in the table below for the indicated adjustment addresses.

Adjustment address	Adjustment data
65	20
66	00
73	D_{73}
74	D_{74}

15) Select adjustment address 89 and enter adjustment data F0.
16) Change the adjustment data of adjustment addresses 01 and 02 with the adjustment remote commander to move the white luminance point and black luminance point.
(Move the white luminance point to the origin point when using the vectorscope.)
17) Select adjustment address 89 and enter adjustment data of 00.
18) Remove the filter C14.
19) Change the adjustment address to store the adjustment data in the memory.

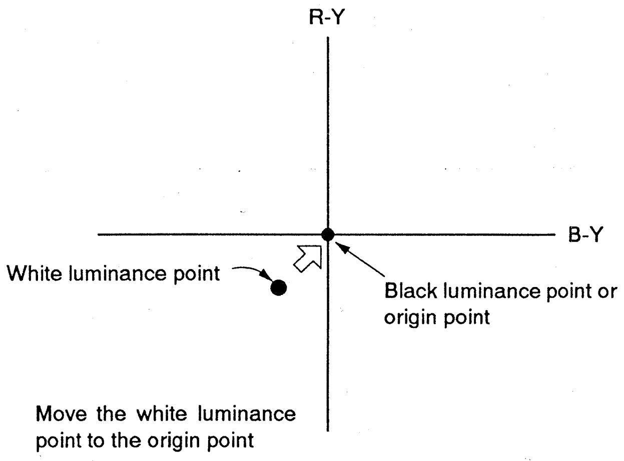

R-Y
B-Y
White luminance point
Black luminance point or origin point
Move the white luminance point to the origin point

Fig. 7-35.

(Example)
When the adjustment data obtained in Step 2) has the following values.

Adjustment address	Adjustment data
01	2A
02	53

→ Entered into adjustment address 78

D_1=2A and D_2=53 when there is conversion to decimal using Table 7-5.
$D_1'=42$
$D_2'=83$

Thus,
$D_{80}'=42+1=43$
$D_{81}'=83+3=86$
$D_{77}'=(83 \times 1.9)-43.2=114.5$

Rounding off the decimal portion and converting to hexadecimal by Table 7-5 results in,
D_{80}=2B → Entered into adjustment address 80.
D_{81}=56 → Entered into adjustment address 81.
D_{77}=72 → Entered into adjustment address 77.
In the same manner,
$D_{79}'=(83+10)=93$
D_{79}=5D → Entered into adjustment address 79

In addition,
$d'=(42 \times 5)+83=293$

Thus, $[308 \geqq d' \geqq 286]$
$D_{73}'=(293 \div 2)+25=171.5$
∴ D_{73}=AC → Entered into adjustment address 73
$D_{74}'=171.5-39=132.5$
∴ D_{74}=85 → Entered into adjustment address 74

Also, adjustment data of 41 is entered into adjustment address 65, and adjustment data of 01 is entered into adjustment address 66. The steps beginning from 15) are then performed.

7-2-27. Outdoor White Balance Confirmation

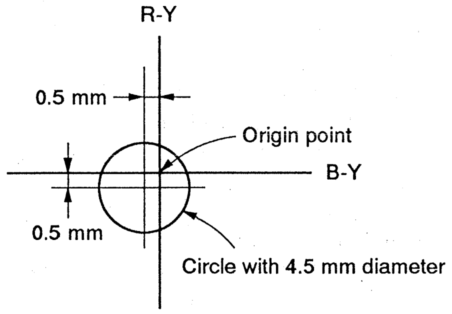
Subject	White pattern standard picture frame
Filter	Filter C14 for color temperature correction
Measurement Point	When vectorscope used: video output terminals When oscilloscope used: CH1 (X): emitter of Q642 (B-Y) CH2 (Y): emitter of Q614 (R-Y)
Measuring Instrument	
Specified Value	See Fig. 7-36.

Connections:
1) Remove the jumper wire connected to Pin B6 (CAM ADJ) of the check point array. (Turns off the EVR adjustment mode)

Checking method:
1) Press the white balance button to select the outdoor white balance mode. (☀ mark is displayed on EVF screen or monitor TV screen (when data screen ON).)
2) Confirm that the center of the white luminance point is within the circle shown in the figure below.

Note: When using a vectorscope, adjust the GAIN and PHASE of the vectorscope so that burst luminance point move to with the burst position of the color reproduction frame.

[When using vectorscope]



[When using oscilloscope]

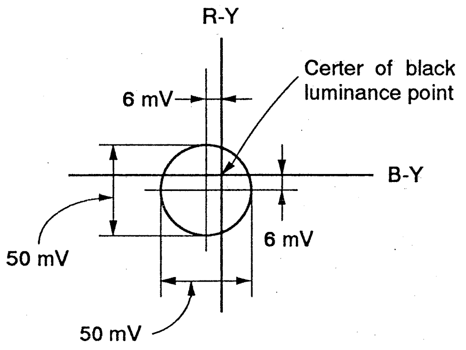


Fig. 7-36.

7-2-28. Focus Motor Speed Adjustment (CV-8 Board)

Subject	Arbitrary
Measurement Point	CN803
Measuring Instrument	AF microcomputer data reading jig
Adjustment Address	A26 (FOCUS SPEED)
Specified Value	Average value of data indicated on jig=4.0 ± 0.5

Remarks: The rotation time from the close extreme to far extreme of the focus ring should be approximately 2.1 seconds after completion of adjustment.

Adjustment method:
1) Select adjustment address 37 with the adjustment remote controller and enter adjustment data of 01. (Sets hunching mode)
2) Set the adjustment address to 26.
3) Change the adjustment data so that the indication on the AF microcomputer data reading jig is 04 while the ring is rotating.
4) Press the HOLD button of the AF microcomputer data reading jig while the focus ring is rotating to read the indication value.
5) Repeat step 4) ten times and obtain the average value.
Specified value=4.0 ± 0.5
Repeat steps 3) and 4) if the specified value is not satisfied.
6) Set the adjustment address to 37 and set the adjustment data to 00. (Releases hunching mode)
7) Change the adjustment address to store the adjustment data in the memory.

7-2-29. Macro Area Adjustment (CV-8 Board)

Subject	Arbitrary
Measurement Point	CN803
Measuring Instrument	AF microcomputer data reading jig
Adjustment Address	39 (MACRO)
Specified Value	(Value at zoom ring WIDE position) +2

Adjustment method:
1) Set the zoom ring to the WIDE position (8.5 mm position).
2) Select adjustment address 37 with the adjustment remote controller and set the adjustment data to 03. (Sets zoom position indication mode)
3) Read the data indicated on the AF microcomputer data reading jig. (Data in the range of 00 to 0C is displayed if normal.)
4) Change the adjustment address to 39.
5) Add 2 to the data read from the jig and enter as the adjustment data. (See Table 7-5. Hexadecimal-Decimal Conversion Table)
6) Change the adjustment address to 37 and set the adjustment data to 00. (Releases zoom position indication mode)
7) Change the adjustment address to store the adjustment data in the memory.

7-2-30. Auto-Focus LLA Adjustment (CV-8 Board)

Subject	All black (cover lens with black cap)
Measurement Point	CN803
Measuring Instrument	AF microcomputer data reading jig
Adjustment Address	38 (LLA)
Specified Value	(Value indicated on jig) –2

Adjustment method:

1) Select adjustment address 37 with the adjustment remote controller and set to 0B as the adjustment data. (Sets auto-focus LLA adjustment mode)
2) Read the data indicated on the AF microcomputer data reading jig and call this value D.
3) Subtract 2 from D and make this value the LLA data.
   (See Table 7-5. Hexadecimal-Decimal Conversion Table)

   (Example)
   When D=30 (48), LLA data is 2D (46)
   When D=31 (49), LLA data is 2F (47)
   ( ) is decimal equivalent

4) Select adjustment address 38 with the adjustment remote controller and enter the LLA data as the adjustment data.
5) Select adjustment address 37 and set 00 as the adjustment data. (Releases auto-focus LLA adjustment mode)
6) Change the adjustment address to store the adjustment data in the memory.

7-2-31. Auto-Focus Adjustment

1. Adjustment in all black pattern (CV-8 board)

Subject	All black (cover lens with black cap)
Measurement Point	CN803
Measuring Instrument	AF microcomputer data reading jig
Adjustment Address	42 (BASE-H)

Adjustment method:

1) Turn off the auto-focus with the FOCUS button (S655 on CK-19 board).
2) Select adjustment address 37 with the adjustment remote controller and enter adjustment data of FF.
3) Read the indication on the AF microcomputer data reading jig and confirmm this value (FHB). (FHB should be 00 to 07.)
4) Obtain adjustment data D_{42} according to the following formulas.
   When FHB=0
   D_{42}=03
   When FHB > 0
   D_{42}=FHB+2 * Hexadecimal calculations
5) Select adjustment address 42 with the adjustment remote controller and enter D_{42} as the adjustment data.
6) Select adjustment address 37 and enter adjustment data of 00.
7) Change the adjustment address to store the adjustment data in the memory.
8) Perform "Adjustment in white pattern" .

2. Adjustment in white pattern (CV-8 board)

Subject	White pattern standard picture frame (Position 1.5 m from the front of the lens reference plane (⏀ mark))
Measurement Point	CN803
Measuring Instrument	AF microcomputer data reading jig
Adjustment Address	41 (LOW CONT)

Measurement method:

1) Confirm that the white pattern is not soiled.
2) Confirm that the auto-focus is turned off.
3) Select adjustment address 37 with the adjustment remote controller and enter adjustment data of FD.
4) Read the indication of the AF microcomputer data reading jig and confirm this value (FAW). (FAW shoud be 00 to 03)
5) Obtain adjustment data D_{41} according to the following formulas.
   D_{41}=FAW+3
6) Select adjustment address 41 with the adjustment remote controller and enter D_{41} as the adjustment data.
7) Select adjustment address 37 and enter adjustment data of 00.
8) Chenge the adjustment address to store the adjustment data.
9) Perform "Adjustment in Siemens star"

3. Adjustment in Siemens star (CV-8 board)

Subject	Siemens Star (1.5m in front of the lens reference surface (⌽ mark))
Measurement Point	CN803
Measuring Instrument	AF microcomputer data reading jig
Adjustment Address	49 (KATAMUKI)

Measurement method:

1) Place the Siemens Star 1.5m in front of the lens reference surface (see Fig. 7-2).
2) Set the zoom lever to the TELE end (68 mm) and turn auto-focus off with the FOCUS button (S655 on the CK-8 board).
3) Adjust camera position so that the center of the Siemens Star displayed on the monitor coincides with the center of the monitor screen.

Illumination Adjustment:

1) Select adjustment address 37 and input adjustment data 09 with the adjustment remote controller (this will cause iris condition to be displayed on the AF microcomputer data reading jig (henceforth referred to as AF jig)).
2) Put a black cap on the lens and read the AF jig indication (value for fully-open iris).
3) Remove the black cap and confirm that the AF jig indication drops below the fully-open value (in case the iris remains fully open, increase Siemens Star illumination).
4) Lower Siemens Star illumination gradually (if using ND filters, gradually increase the ND value). Stop when the AF jig indication reaches the fully-open iris value-2 from the fully-open iris value. (Confirm that the screen does not get dark.)

Auto-focus Adjustment:

1) Set the focus ring to the close-range end (1.3m) and the zoom lever to the TELE end (68 mm), then turn auto-focus on with the FOCUS button.
2) After 2.0 seconds, confirm that the Siemens Star is being clearly reproduced, then press the FOCUS button to turn auto-focus off.
3) Select adjustment address 37 and input adjustment data FF with the adjustment remote controller (the auto-focus filter will be set to the FH side).
4) Read the AF jig indication, and call the data FHSM, and then convert it to the decimal number FHSM'.
   (FHSM' shall be within 16 to 55)
5) Select adjustment address 37 and input adjustment data FD with the adjustment remote controller (the auto-focus will be set to the FA side).
6) Read the AF jig indication, and call the data FASM, and then convert it to the decimal number FASM'.
   (FASM' shall be within 78 to 104)
7) Obtain D49' by the following formula:

$$D49' = \frac{FHSM' - FHB - 4}{FASM' - 40} \times 16$$

- FH-B is the adjustment data for the all-black pattern.

8) Convert D49' to the hexadecimal number D49 (Round off the decimal portion.).
9) Select adjustment address 49 and input adjustment data D49.
10) Select adjustment address 37 and input adjustment data 00.
11) Chenge the adjustment address to store the adjustment data.

7-2-32. Auto-Focus Confirmation

Subject	Siemens star (position 1.5m from the front of the lens reference plane ("⌽" mark)

Note: Perform adjustment with the EVF (electronic viewfinder) attached.

Measuring method:

1) Place the Siemens star 1.5m from the front of the lens reference surface (See Fig. 7-2.).
2) Set the zoom lever to the TELE position (68 mm) and turn on auto focus with the FOCUS button.
3) Adjust the direction of the camera so that center of the Siemens star is lined up with the center of the monitor screen on the monitor TV screen.
4) To open the iris, reduce the illumination of the Siemens star to the range in which the ■ mark in the upper center of the EVF screen does not light up.
   (Or cover lens with the ND filter)
5) Turn off the auto-focus with the FOCUS button.
6) Manually rotate the focus ring to set the focus. Confirm that the focus mark is inside the range shown in Fig. 7-37 at this time.
   Perform Flange Back Adjustment if this condition is not satisfied.
7) Rotate the focus ring to the close extreme (1.3m).
8) Turn on the auto-focus with the FOCUS button.
9) Confirm that there is focusing within two seconds and a sharp image can be obtained.
10) Turn off the auto-focus and rotate the focus to the far extreme (∞).
11) Turn on the auto-focus.
12) Confirm that there is focusing within three seconds and a sharp image can be obtained.

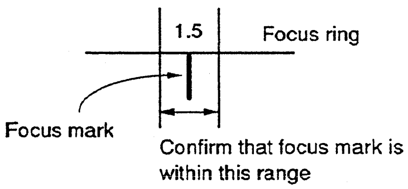


Fig. 7-37.

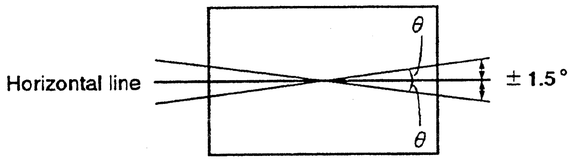
7-3. ELECTRONIC VIEWFINDER SYSTEM ADJUSTMENT (TYPE A) (VF-14 BOARD)

7-3-1. Horizontal Tilt Adjustment

Mode	Playback
Signal	Alignment tape for checking operation (WR5-5NSP) Monoscope portion
Specified Value	See Fig. 7-38.

Adjustment method:

1) By turning RV904 (BRIGHT), adjust for a luminance level which provides appropriate visibility of the CRT screen.
2) Loosen the DY (deflection yoke) tightening nut.
3) Make the image horizontal by rotating DY.
4) Retighten the DY tightening nut. (Do not tighten excessively.)


θ
Horizontal line
± 1.5°
θ

Specified value: Image orientation within ± 1.5° of horizontal line.

Fig. 7-38.

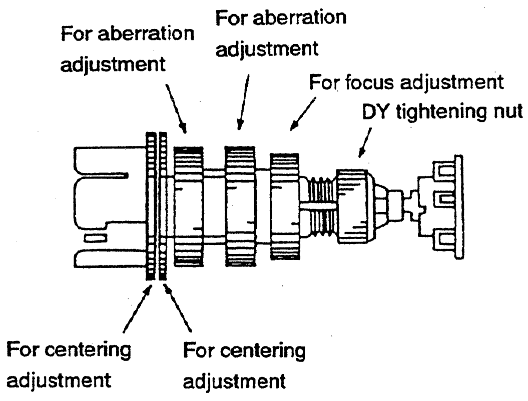

For aberration adjustment
For aberration adjustment
For focus adjustment
DY tightening nut
For centering adjustment
For centering adjustment

Fig. 7-39.

7-3-2. Centering Adjustment

Mode	Playback
Signal	Alignment tape for checking operation (WR5-5NSP) Monoscope portion
Specified Value	See Fig. 7-40.

Adjustment method:

1) Turn the centering adjustment rings to provide an image with even right, left, upper and lower margins. (See Fig. 7-40.)

Note: Since the centering position is affected by the earth magnetism, turn the equipment over 360° horizontally, and make adjustments at the orientation which exhibits median displacements of the image.

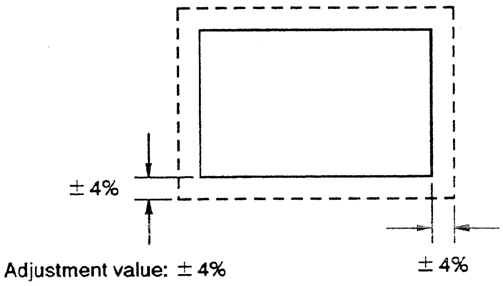

± 4%
Adjustment value: ± 4%
± 4%

Fig. 7-40.

7-3-3. Focus Adjustment

Mode	Playback
Signal	Alignment tape for checking operation (WR5-5NSP) Monoscope portion

Adjustment method:

1) Adjust for optimum focus using the focus ring. (See Fig. 7-39.)

7-3-4. Aberration Adjustment

Mode	E-E
Signal	Dot pattern
Specified Value	See Fig. 7-41.

Adjustment method:

1) Use the aberration adjustment rings to adjust any trailing dots to within 2 times the dot diameter and any fan shaped aberrations to within the dot diameter.
2) If off center, repeat the Centering Adjustment.

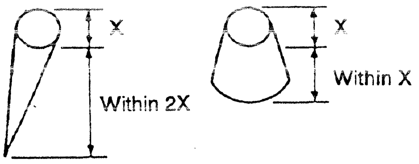


Fig. 7-41.

7-3-5. Horizontal Oscillation Frequency Adjustment (VF-14 Board)

Mode	Playback
Signal	Alignment tape for checking operation (WR5-5NSP)
Measurement Point	Positive terminal of C904
Measuring Instrument	Digital voltmeter or oscilloscope (DC range)
Adjustment Element	RV901
Specified Value	2.60 ± 0.05 Vdc

Adjustment method:

1) Adjust to 2.60 ± 0.05 Vdc using RV901.

7-3-6. Horizontal Amplitude Adjustment (VF-14 Board)

Mode	Playback
Signal	Alignment tape for checking operation (WR5-5NSP) Monoscope portion
Adjustment Element	C911
Specified Value	6 ± 3%

Adjustment method:

1) Line up the upper and lower sections of the monoscope image with the upper and lower edges of the screen by rotating RV902.
2) Rotate RV904 to set the brightness to the normal level.
3) Short or open the pattern (A) of the H size adjustment capacitor (C911) to provide horizontal overscans of 6 ± 3% (total of left and right). (See Fig. 7-48.)

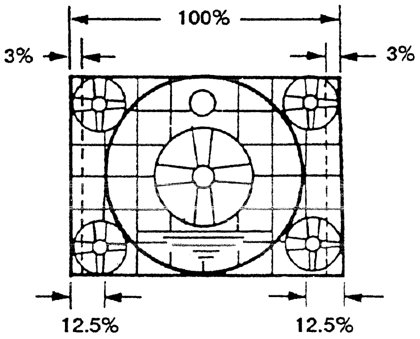
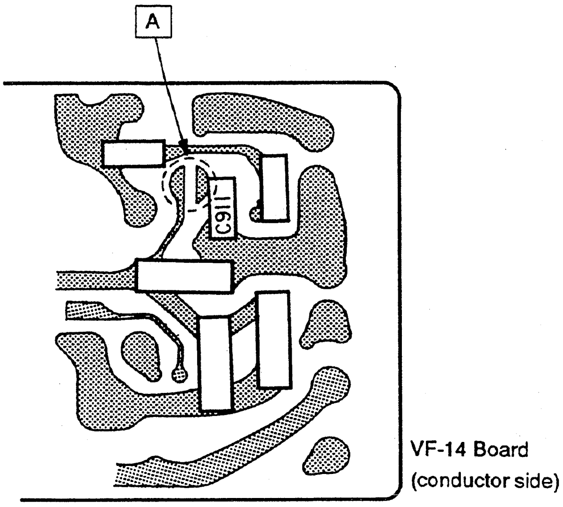


Fig. 7-42.



A section	H size
Open	Large
Short	Small

Fig. 7-43.

7-3-7. Vertical Amplitude Adjustment (VF-14 Board)

Mode	Playback
Signal	Alignment tape for checking operation (WR5-5NSP) Monoscope portion
Adjustment Element	RV902
Specified Value	5 ± 3%

Adjustment method:

1) By turning RV902, adjust vertical overscan to 5 ± 3% (upper and lower total).

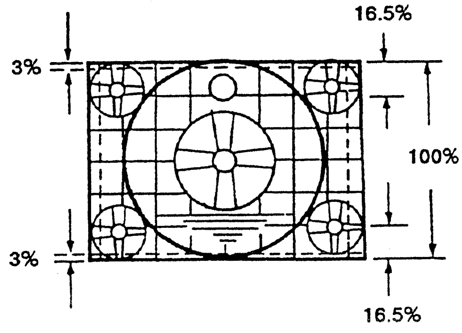


Fig. 7-44.

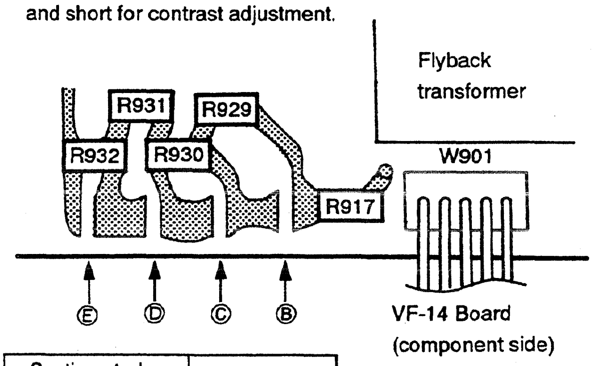
7-3-8. Brightness, Contrast Adjustments (VF-14 Board)

Mode	Playback
Signal	Alignment tape for checking operation (WR5-5NSP) Monoscope portion
Adjustment Element	Brightness: RV904 Contrast: see Fig. 7-45.

Adjustment method:

1) Perform brightness and contrast adjustments alternately until the bright and dark areas of a gray scale are displayed correctly. (The bright areas should not be made too bright to avoid a fuzzy display of the cross-hatches in the monoscope circle, and the brightness of the dark areas should be such that discrimination between the darkest and second darkest area is possible.)

Use sections Ⓑ to Ⓔ of VF-14 board to open and short for contrast adjustment.



Sections to be shorted	Contrast
Ⓓ and Ⓔ	High
Ⓔ	↑
Ⓓ	
All open	
Ⓒ	
Ⓑ	↓
Ⓑ and Ⓒ	Low

Fig. 7-45.

7-3-9. Horizontal Amplitude, Vertical Amplitude and Focus Checks

Values should conform to specifications given in 7-3-6. Horizontal Amplitude Adjustment and 7-3-7. Vertical Amplitude Adjustment. If not, readjust accordingly, and repeat 7-3-8. Brightness, Contrast Adjustments. In this case, focus needs to be checked. If the image is not clear, perform 7-3-3. Focus Adjustment and 7-3-4. Aberration Adjustment.

7-4. ELECTRONIC VIEWFINDER SYSTEM ADJUSTMENT (TYPE B) (VF-22 BOARD)

7-4-1. Horizontal Tilt Adjustment

Mode	Playback
Signal	Alignment tape for checking operation (WR5-5NSP) Monoscope portion
Specified Value	See Fig. 7-47.

Adjustment method:

1) Adjust the volume array Ⓓ (BRIGHT) for appropriate brightness on CRT screen. (See Fig. 7-48.)
2) Loosen the DY (deflection yoke) tightening nut. (See Fig. 7-46.)
3) Make a picture horizontal by turning the DY.
4) Retighten the nut. (Do not tighten excessively.)

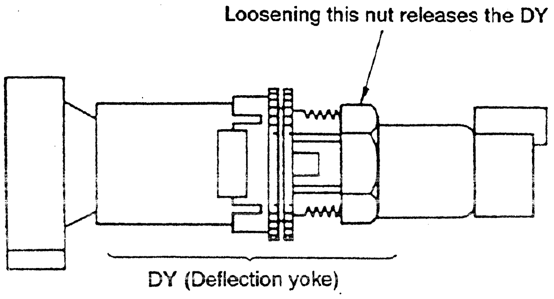
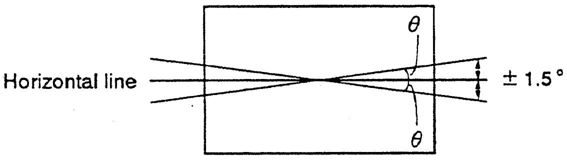
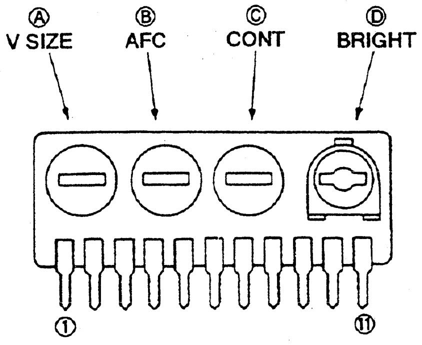


Fig. 7-46.



Specified value: Image orientation within ± 1.5° of horizontal line.

Fig. 7-47.



Volume array (CP901)

Fig. 7-48.

7-4-2. Centering Adjustment

Mode	Playback
Signal	Alignment tape for checking operation (WR5-5NSP) Monoscope portion
Specified Value	See Fig. 7-50.

Adjustment method:

1) Turn the centering adjustment rings to provide an image with even right, left, upper and lower margins. (See Fig. 7-49.)

Note: Since the centering position is affected by the earth magnetism, turn the equipment over 360° horizontally, and make adjustments at the orientation which exhibits median displacements of the image.

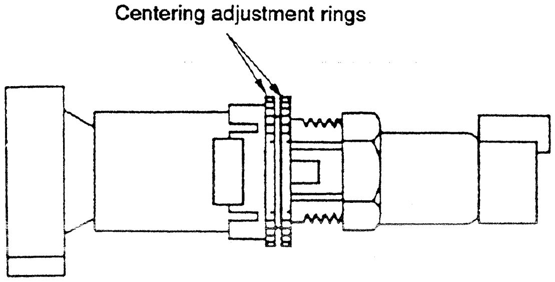


Fig. 7-49.

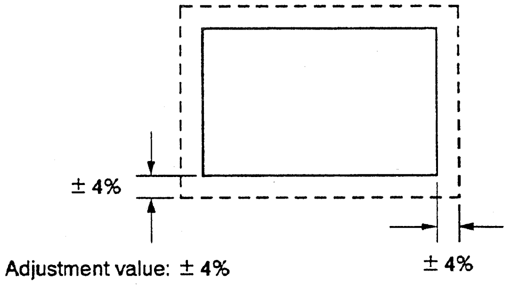


Fig. 7-50.

7-4-3. AFC Adjustment (VF-22 Board)

Mode	E-E or Camera standby
Signal	Color bar
Measurement Point	C915 ⊕ side
Measuring Instrument	Digital voltmeter or oscilloscope (DC range)
Adjustment Element	Volume array Ⓑ (AFC)
Specified Value	2.6 ± 0.2 Vdc

Adjustment method:

1) Adjust volume array Ⓑ (AFC) for 2.6 ± 0.2 Vdc. (See Fig. 7-48.)

7-4-4. Horizontal Amplitude Adjustment (VF-22 Board)

Mode	Playback
Signal	Alignment tape for checking operation (WR5-5NSP) Monoscope portion
Adjustment Element	C905
Specified Value	6 ± 3%

Adjustment method:

1) Line up the upper and lower sections of the monoscope image with the upper and lower edges of the screen by rotating volume array Ⓐ (V SIZE). (See Fig. 7-48.)
2) Rotate volume array Ⓓ (BRIGHT) to set the brightness to the normal level.
3) Short or open the pattern A of the H size adjustment capacitor (C905) to provide horizontal overscans of 6 ± 3% (total of left and right). (See Fig. 7-52.)

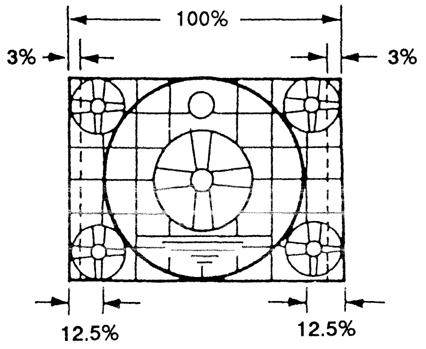
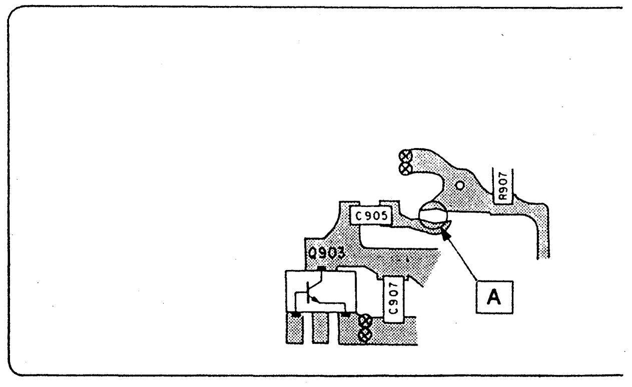


Fig. 7-51.



VF-22 Board (conductor side)

A section	H size
Open	Large
Short	Small

Fig. 7-52.

7-4-5. Vertical Amplitude Adjustment (VF-22 Board)

Mode	Playback
Signal	Alignment tape for checking operation (WR5-5NSP) Monoscope portion
Adjustment Element	Volume array Ⓐ (V SIZE)
Specified Value	5 ± 3%

Adjustment method:

1) By turning volume array Ⓐ (V SIZE), adjust vertical overscan to 5 ± 3% (upper and lower total). (See Fig. 7-48.)

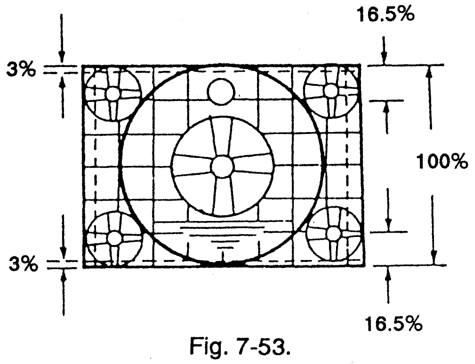


Fig. 7-53.

7-4-6. Focus Adjustment (VF-22 Board)

Mode	Playback
Signal	Alignment tape for checking operation (WR5-5NSP) Monoscope portion
Adjustment Element	RV901

Adjustment method:

1) Adjust to the best focus point with RV901.

7-4-7. Brightness, Contrast Adjustments (VF-22 Board)

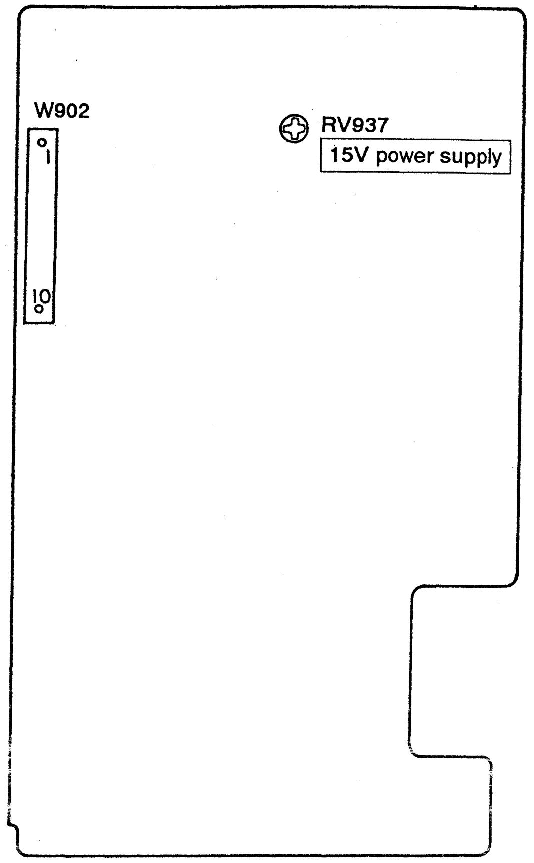
Mode	Playback
Signal	Alignment tape for checking operation (WR5-5NSP) Monoscope portion
Adjustment Element	Brightness: Volume array Ⓓ (BRIGHT) Contrast: Volume array Ⓒ (CONT)

Adjustment method:

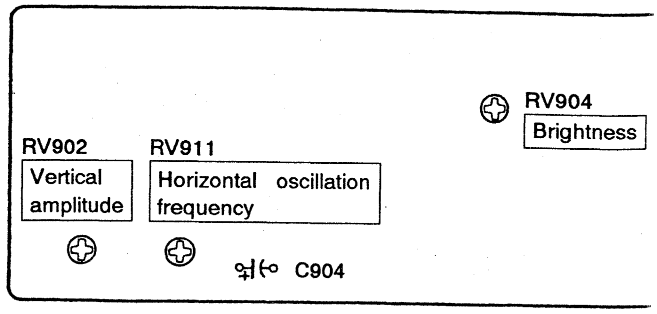
1) Adjust volume array Ⓓ (BRIGHT) and Ⓒ (CONT) alternately until the bright and dark areas of a gray scale are displayed correctly. (The bright areas should not be made too bright to avoid a fuzzy display of the cross-hatches in the monoscope circle, and the brightness of the dark areas should be such that discrimination between the darkest and second darkest area is possible.) (See Fig. 7-48.)

7-5. ADJUSTMENT ELEMENTS LOCATION

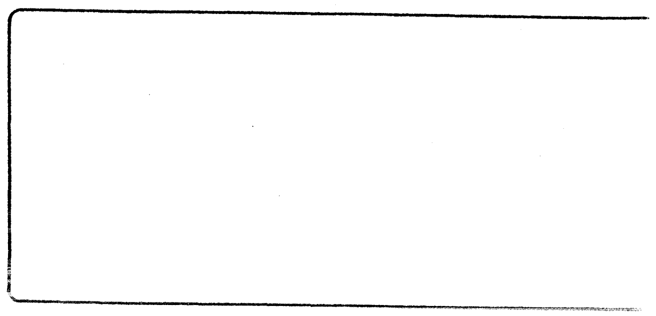
PS-225 BOARD (COMPONENT SIDE)



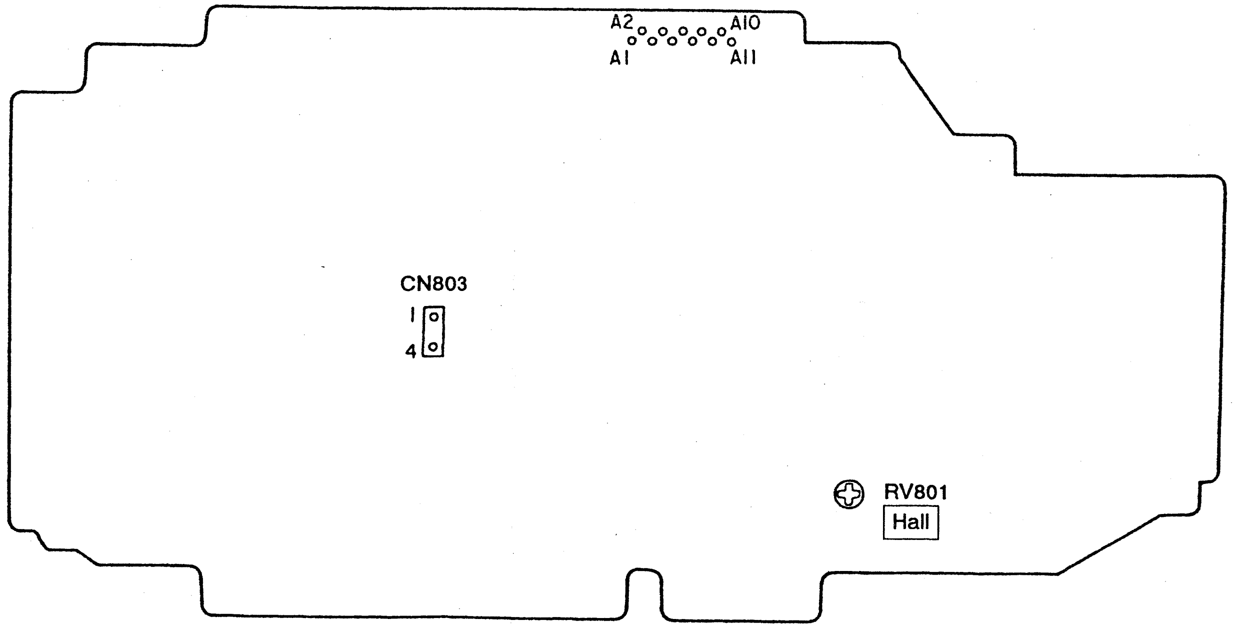
VF-14 BOARD (COMPONENT SIDE)



VF-14 BOARD (CONDUCTOR SIDE)



CV-8 BOARD (COMPONENT SIDE)



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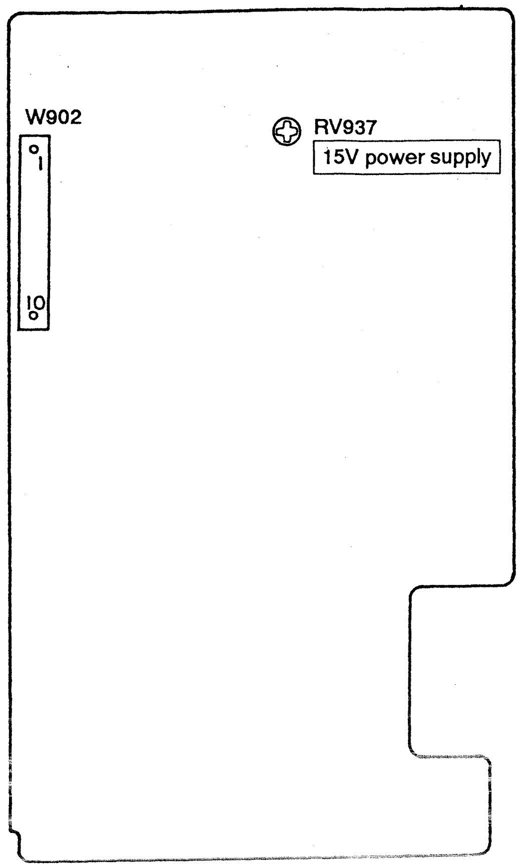
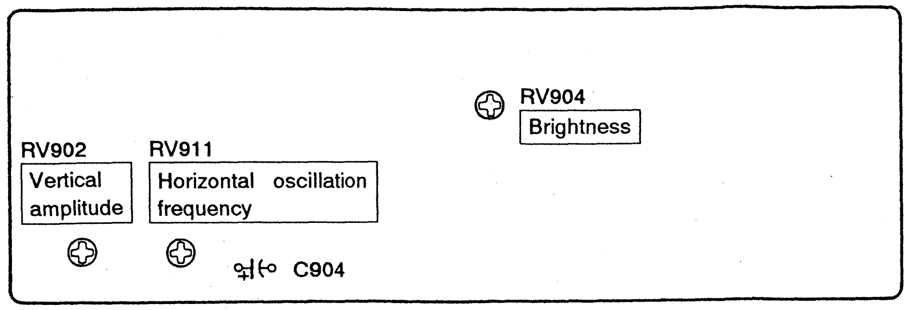
7-5. ADJUSTMENT ELEMENTS LOCATION

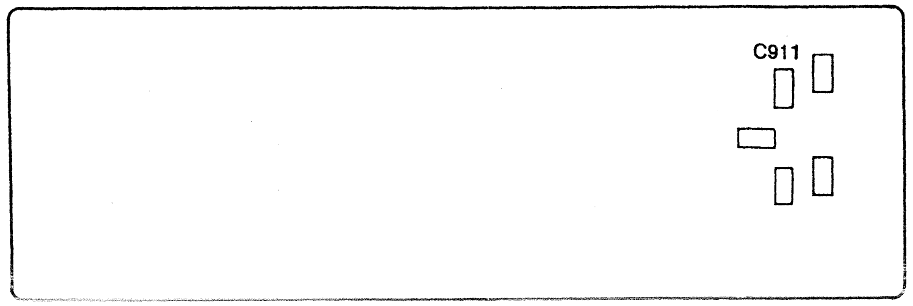
PS-225 BOARD (COMPONENT SIDE)


W902
1
10
RV937
15V power supply

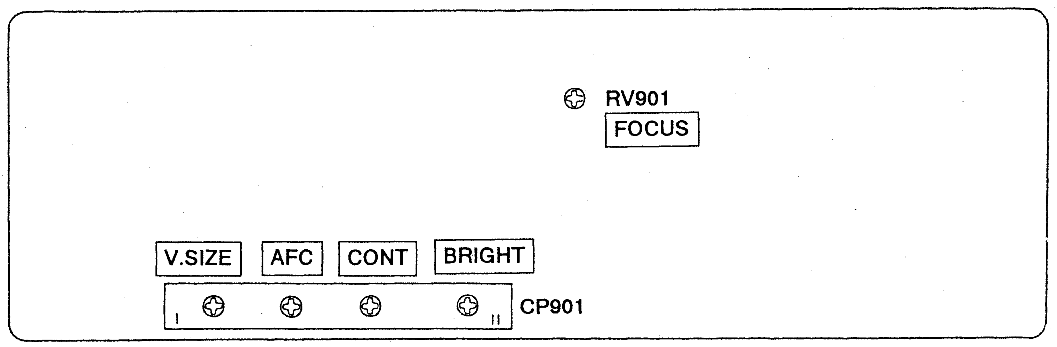
VF-14 BOARD (COMPONENT SIDE)


RV904
Brightness
RV902
Vertical amplitude
RV911
Horizontal oscillation frequency
C904

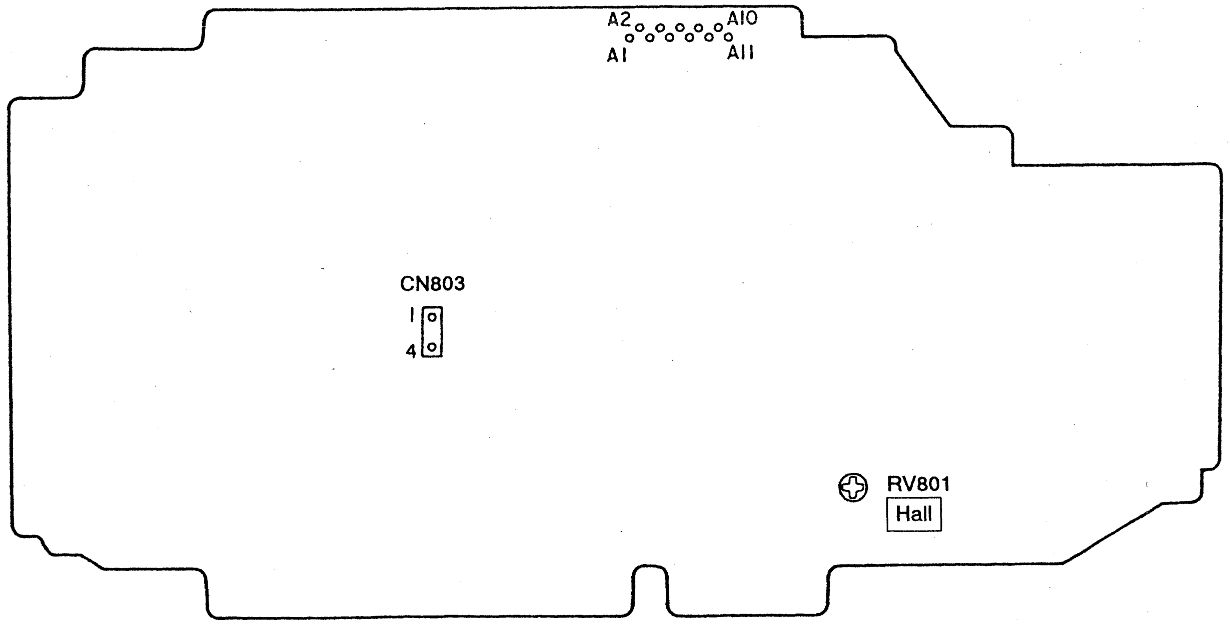
VF-14 BOARD (CONDUCTOR SIDE)



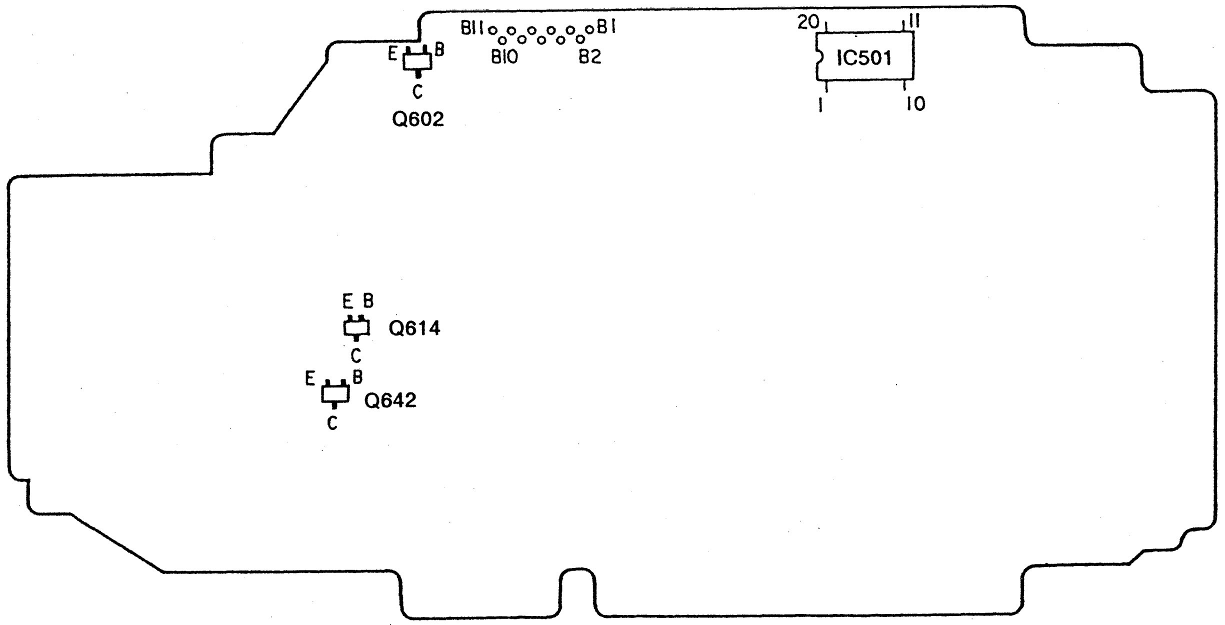
VF-22 BOARD (COMPONENT SIDE)


RV901
FOCUS
V.SIZE
AFC
CONT
BRIGHT
1
11
CP901

CV-8 BOARD (COMPONENT SIDE)


A2
A10
A1
A11
CN803
1
4
RV801
Hall

CV-8 BOARD (CONDUCTOR SIDE)


B11
B1
B10
B2
E
B
C
Q602
20
11
IC501
1
10
E B
C
Q614
E
B
C
Q642

SECTION 8
MECHANISM BLOCK ADJUSTMENTS

Mechanism Block Adjustments

Refer to the separate "8mm Video Mechanical Adjustment Manual III U Mechanism" for adjustment and checking of the mechanism block and for replacement of mechanical parts.
Refer to the following for setting of track shift mode.

8-1. TRACK SHIFT MODE SETTING

[Setting method]

- Connect the TEST A terminal and TEST B terminal to the COM terminal. Connect Pin ① and Pin ③ of CN508 on the VK-3 board to Pin ②. (See Fig. 8-1.)

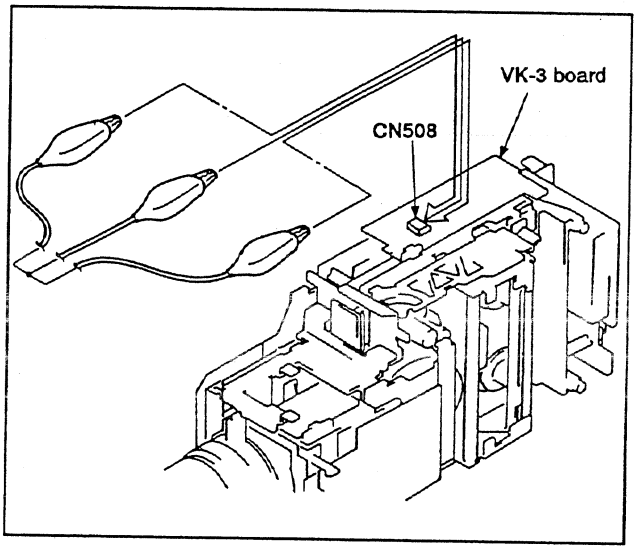

VK-3 board
CN508

Fig. 8-1.

8-2. PREPARATION FOR ADJUSTMENT

1) Perform cleaning of the tape running surface (tape guides, drums, capstan shafts, and pinch rollers).
2) Connection of oscilloscope
   CH 1: RF signal output (V RF OUT) of drum head
   Pin ③ (V RF OUT) of CN102 on the CO-2 board
   External trigger: External trigger output (RF SW.P)
   Pin ④ of CN102 on the CO-2 board.
3) Play back the alignment tape (WR5-1N, Ref No. J-5) for tracking.
4) Confirm that the RF waveform on oscilloscope at both entrance and exit sides is flat. (See Fig. 8-3.)
   Perform the adjustment described below if not flat.

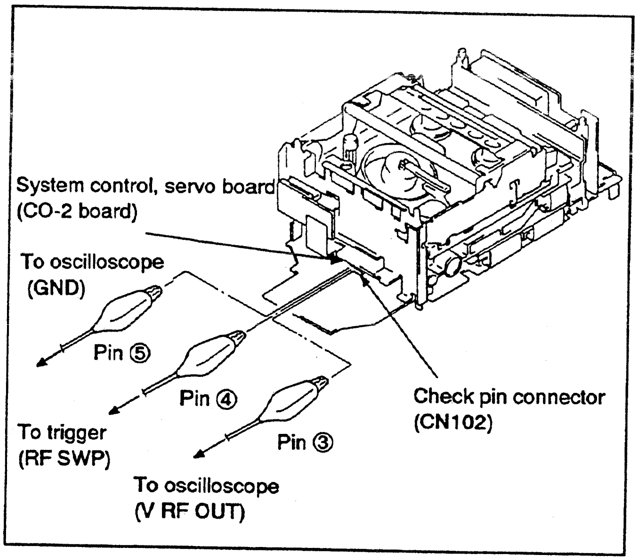

System control, servo board
(CO-2 board)
To oscilloscope
(GND)
Pin ⑤
Pin ④
To trigger
(RF SWP)
Pin ③
To oscilloscope
(V RF OUT)
Check pin connector
(CN102)

Fig. 8-2.

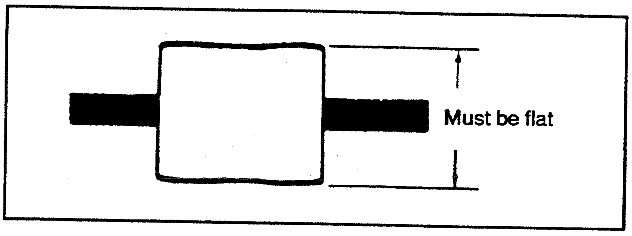

Must be flat

Fig. 8-3.

SECTION 9

VIDEO BLOCK ADJUSTMENTS

During the adjustments, see the adjustment element location to the adjustment from page 254.

Use the following measuring instruments for adjustment of the VTR block.

[Equipment to be used]

1) Monitor TV
2) Dual trace oscilloscope of over 10 MHz band, incorporates delay mode. (Use 10 : 1 probe unless otherwise specified)
3) Frequency counter
4) Pattern generator with video output terminal
5) Digital voltmeter
6) Audio generator
7) Audio level meter
8) Audio distortion meter
9) Audio attenuator
10) Regulated power supply
11) Alignment tapes
    Tracking adjustment (WR5-1NP) *1
        Parts Code: 8-967-995-02
    Video frequency characteristics adjustment (WR5-6N) *2
        Parts Code: 8-967-995-12
    Operation check (WR5-4NL) *3
        Parts Code: 8-967-995-51
        (WR5-5NSP) *4
        Parts Code: 8-967-995-42

    Note:
    *1 WR5-1N (8-967-995-01) is also available.
    *2 WR5-2N (8-967-995-11) is also available.
    *3 WR5-3NL (8-967-995-31) is also available.
    *4 WR5-3NSP (8-967-995-22) and
    WR5-4NSP (8-967-995-41) are also available.
12) Adjustment remote controller (J-6082-053-A)

[Connection of equipment]

Unless otherwise specified, adjustment is made with the measuring instrument connected as shown in the diagram below.

- Camera/video power switch......Video position

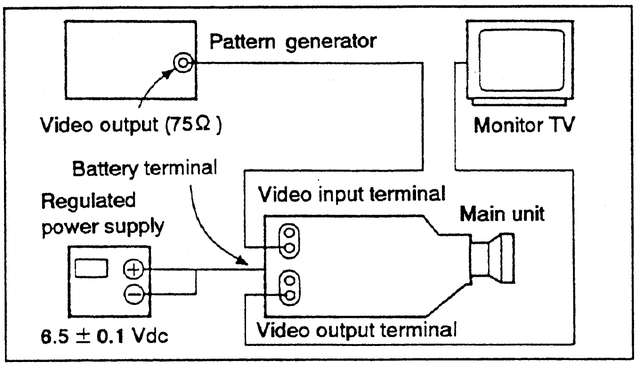

Pattern generator
Video output (75Ω)
Monitor TV
Battery terminal
Regulated power supply
Video input terminal
Main unit
6.5 ± 0.1 Vdc
Video output terminal

Fig. 9-1.

[Set-up during adjustment]

Since the video output signal obtained from the pattern generator is used as the adjusting signal for the VTR block, it is necessary that this video output signal be within the required specifications. Connect an oscilloscope to J202 (video input terminal) on the CV-8 board and make sure that the amplitude of the video SYNC signal is approximately 0.3V, that the video block amplitude is approximately 0.7V, that the burst signal amplitude is approximately 0.3V with flat characteristics, and the signal level ratio between the burst signal and "Red" signal is 0.30 : 0.66. The video signal (color bars) used for VTR block electrical adjustment are shown in Fig. 9-2.

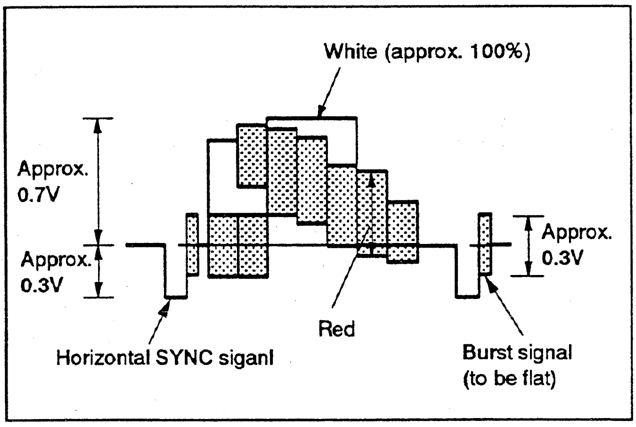
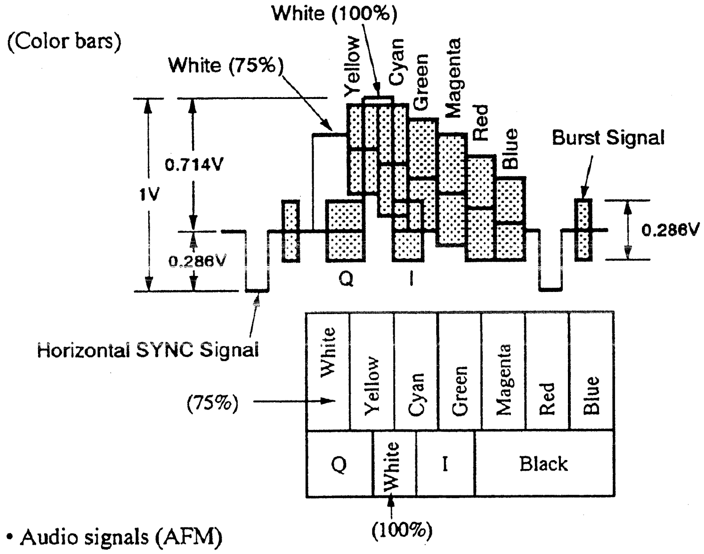

White (approx. 100%)
Approx. 0.7V
Approx. 0.3V
Approx. 0.3V
Red
Horizontal SYNC siganl
Burst signal (to be flat)

Fig. 9-2. Color bar signal of pattern generator

[Alignment tapes]

Tape	Content	Use
Tracking (WR5-1NP)	1. Recording area: PCM – video 2. Recording content: CH2: 1 MHz linearity adjustment signal (CH1: 9 MHz)	Drum linearity adjustment
Video Frequency Response (WR5-6N)	1. Recording area: Video 2. Recording content: RF sweep 0 to 10 MHz 3. Maker: 1, 3.58, 5.5 and 7 MHz	Frequency response adjustment
Operation Check SP mode (WR5-5NSP) LP mode (WR5-4NL) Note: PCM area is not included in WR5-4NL	1. Recording area: Video 2. Recording content: ■ Video area • Video signals Color bars 4 minutes Monoscope 4 minutes  (Color bars) White (100%) White (75%) Yellow Cyan Green Magenta Red Blue Burst Signal 0.714V 1V 0.286V 0.286V Q I Horizontal SYNC Signal (75%) White Yellow Cyan Green Magenta Red Blue Q White I Black (100%) • Audio signals (AFM) 400 Hz 60% modulation ■ PCM area • Audio signals (PCM) 1 kHz 4 minutes Color bar 20 Hz 2 sec 400 Hz 4 sec 14 kHz 2 sec } Iterative Monoscope	Operation check

[I/O level and Impedance]

Video input Pin jack
Input signal: 1 Vp-p, 75Ω unbalanced, negative sync

Video output Pin jack
Output signal: 1 Vp-p, 75Ω unbalanced, negative sync

Audio input Pin jack
Input level: –7.5 dBs (0 dBs=0.775 Vrms)
Input impedance: More than 47 kΩ

Audio output Pin jack
Specified output: –7.5 dBs
Output impedance: More than 2.2 kΩ

[Service modes]
This unit is equipped with service modes for adjustment and operation checking.
There are the following two service modes and switching between them is by connection between GND and Pin B6 of the check point array on the CV-8 board.

Service Mode	Function	Connection between GND and Pin B6 of the check point array (CV-8 board)
Status indication mode	For video block adjustment, operation checking	Open (no connection)
EVR adjustment mode	For adjustment of camera block	Shorted

Refer to Camera Block Adjustment for details on the EVR adjustment mode.

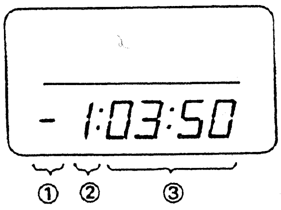
1. Invoking service mode

1) Connect the adjustment remote controller to the remote terminal (J951 on RC-29 board) of the main unit.
2) Set the HOLD switch of the adjustment remote controller to the HOLD position (SERVICE position).

The status indication mode is invoked by the above operation. (To select the EVR adjustment mode, connection between Pin B6 of the check point array and GND is required.)

2. Indication on adjustment remote controller LCD in status indication mode

Note: In categories 1 through 4, the same information is displayed in the EVF screen and on the monitor screen (when the data screen is ON).



①...... Minus segment flashes to indicate that the service mode has been invoked.
②...... Indicates service mode category.
③...... Indicates battery voltage, LAST EMG, PRESET EMG, or MODE SW CODE according to current category.

3. Category selection and indication in each category

Select the desired category with the FF or REW button of the adjustment remote controller. There are four categories (1 through 4) and the indications are different for each. (Note that category 0 is the EVR adjustment mode.)

Caategory	Indication on LCD
1	A/D conversion value for battery voltage (decimal indication)[*1] 00 : 00 – 02 : 55
2	LAST EMG (last emergency)[*2] Refer to Service Mode Error Indications.
3	PRESENT EMG (current emergency)[*3] Refer to Service Mode Error Indications.
4	MODE SW CODE (mechanism status) 00 : 00 EJECT 00 : 01 I.A 00 : 02 UNLOAD 00 : 03 I.B 00 : 04 STOP (threading completed) 00 : 05 I.C 00 : 06 RP(REC, PB, FF, REW, CUE, REVIEW, PAUSE) 00 : AA Mode switch error

Notes:
1) Indicates a value proportional to the battery voltage.
2) LAST EMG indicates the error occurring last before entering service mode. Even if an error occurs in the service mode, it is not indicated.
3) PRESENT EMG indicates the status when the FF or REW button of the adjustment remote controller was pressed. So, the indication does not change even if the error is eliminated.

- **Service mode error indication**

Error Status	PRESENT EMG Indication LAST EMG	Indication
No error	00 : 00	00 : 00
Loading motor	00 : 01	00 : 01
REEL FG error during unthreading	00 : 02	00 : 02
REEL FG error not during unthreading	00 : 03	00 : 03
Capstan error	00 : 04	00 : 04
DRUM PG error (0) when starting drum	00 : 05	00 : 05
DRUM PG error (1) when starting drum	01 : 05	00 : 14 or 00 : 0E
DRUM PG error (2) when starting drum	02 : 05	00 : 15 or 00 : 0F
No DRUM PG (0) when starting drum	00 : 06	00 : 06
No DRUM PG (1) when starting drum	01 : 06	00 : 14 or 00 : 0E
No DRUM PG (2) when starting drum	02 : 06	00 : 15 or 00 : 0F
DRUM FG error (0) when drum stationary	00 : 07	00 : 07
DRUM FG error (1) when drum stationary	01 : 07	00 : 14 or 00 : 0E
DRUM FG error (2) when drum stationary	02 : 07	00 : 15 or 00 : 0F
No DRUM PG (0) when drum stationary	00 : 08	00 : 08
No DRUM PG (1) when drum stationary	01 : 08	00 : 14 or 00 : 0E
No DRUM PG (2) when drum stationary	02 : 08	00 : 15 or 00 : 0F
Phase error (0) when drum stationary	00 : 09	00 : 09

(1) During tape threading
(2) During tape unthreading
(0) Other

4. Releasing service mode

The service mode is released by returning the HOLD switch of the adjustment remote controller to the NORMAL position or by disconnecting the adjustment remote controller from the remote terminal.

[Test modes]

This unit has three test modes which are invoked by connecting the terminals of CN508 on the VK-3 board.

Test Mode	Connection of CN508 on VK-3 Board	Function
1	Pin ③ (TEST A) and Pin ② (GND) short-circuited	1. Switching position adjustment possible. 2. Error detection disabled.
2	Pin ① (TEST B) and Pin ② (GND) short-circuited	1. For battery end detection adjustment BATTERY SENSE voltage (input voltage to Pin ㊽ of IC501) is displayed in EVF and monitor screen (only when data screen is ON). −1 : 03 : 05 Mode indication BATTERY SENSE voltage
3	Pin ③ (TEST A) and Pin ② (GND)/Pin ① (TEST B) and Pin ② short-circuited.	1. For tape path adjustment (Tracking shifted by 1/4 track) Refer to MECHANISM ADJUSTMENTS.

9-1. POWER SUPPLY ADJUSTMENTS AND CHECKS

9-1-1. Oscillation Frequency Adjustment (PS-225 Board)

Mode	Stop (POWER ON)
Measurement Point	Collector of Q941
Measuring Instrument	Frequency counter
Adjustment Element	RV938
Specified Value	475 ± 5 kHz

Adjustment method:

1) Adjust the oscillation frequency to 475 ± 5 kHz with RV938.

9-1-2. Video 5V Adjustment (PS-225 Board)

Mode	Stop (POWER ON)
Measurement Point	Pin ① of W901
Measuring Instrument	Digital voltmeter
Adjustment Element	RV936
Specified Value	5.00 ± 0.05 Vdc

Adjustment method:

1) Adjust with RV936 so that it becomes 5.00 ± 0.05 Vdc.

9-2. SYSTEM CONTROL ADJUSTMENTS

9-2-1. Battery Down Adjustment (CO-2 Board)

Mode	Recording
Signal	Arbitrary
Measurement Point	Confirmation on monitor screen
Measuring Instrument	
Adjustment Element	RV551
Specified Value	Battery indication (🔋) flashes at 0.8s cycle and counter value is approximately "–1 : 02 : 85".

Connections:

1) Connect a regulated power supply and digital voltmeter as shown in Fig. 9-3.
2) Connect Pin ① (TEST B) and Pin ② (GND) of CN508 on the VK-3 board with a jumper wire. (Test 2 mode)

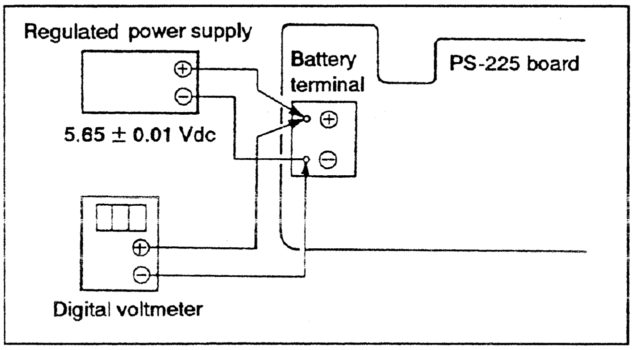


Fig. 9-3.

Adjustment method:

1) Press the data screen button (S509) on the VK-3 board to display the counter on the monitor screen. (See Fig. 9-4.)
2) Confirm that the indication on the digital voltmeter is 5.65 ± 0.01 Vdc.
3) Slowly rotate RV551 and set to the closest point at which the battery indication (🔋) on the monitor screen flashes at a rate of 3.2 times per seconds (3.2 Hz) and the counter value is "–1 : 02 : 85".

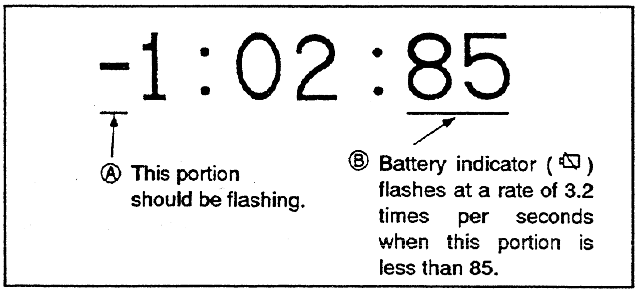

-1 : 02 : 85
Ⓐ This portion should be flashing.
Ⓑ Battery indicator (🔋) flashes at a rate of 3.2 times per seconds when this portion is less than 85.

Fig. 9-4.

Checking method:

Perform the following checks and repeat the adjustments again if the required conditions are not satisfied.

1) Adjust the output voltage of the regulated power supply so that the indication of the digital voltmeter becomes 5.6 ± 0.01 Vdc.
2) Set the unit to the camera REC mode after turning the power off and then on.
3) Press the data screen button on the VK-3 board so that there is data indication on the monitor screen.
4) Confirm that the battery indicator (🔋) is not lit up on the monitor screen (or flashing at a rate of 0.8 times per seconds).
5) Slowly lower the output voltage of the regulated power supply until the indication on the digital voltmeter becomes 5.45 ± 0.01 Vdc.
6) Confirm that the battery indicator (🔋) is flashing on the monitor screen at a rate of 3.2 times per seconds (3.2 Hz).

9-2-2. System Clock Adjustment (CK-19 Board)

Mode	Power ON
Measurement Point	Pin ⑱ of IC651
Measuring Instrument	Frequency counter
Adjustment Element	RV651
Specified Value	330 ± 5 kHz

Adjustment method:

1) Adjust with RV651 so that it becomes 330 ± 5 kHz.

9-2-3. Clock Precision Adjustment (CK-19 Board)

Mode	Power OFF
Measurement Point	Pin ㊶ of IC651
Measuring Instrument	Frequency Counter
Adjustment Element	CV651
Specified Value	8192.00 ± 0.04 Hz

Adjustment method:

1) Disconnect the main power supply and lithium battery.
2) Connect Pin ㉘ (TEST) of IC651 to ground using a jumper wire (TEST mode).
3) Supply 3V (3.0 ± 0.05 Vdc) of power to the lithium battery terminals from a regulated power supply.
4) Adjust to 8192.00 ± 0.04 Hz using CV651.
5) Disconnect the regulated power supply and the jumper wire.

9-3. SERVO SYSTEM ADJUSTMENTS

9-3-1. Oscillation Frequency Adjustment (CO-2 Board)

Mode	Playback
Signal	Arbitrary tape
Measurement Point	Pin ⑩ of IC621
Measuring Instrument	Frequency counter
Adjustment Element	RV621
Specified Value	480 ± 5 kHz

Adjustment method:

1) Set the oscillation frequency to 480 ± 5 kHz using RV621.

9-3-2. REC ATF Level Checking (CO-2 Board)

Mode	Recording
Signal	No signal
Measurement Point	Emitter of Q530
Measuring Instrument	Oscilloscope
Specified Value	Approx. 900 mVp-p

Checking method:

1) Confirm that the REC ATF signal level is approximately 900 mVp-p.

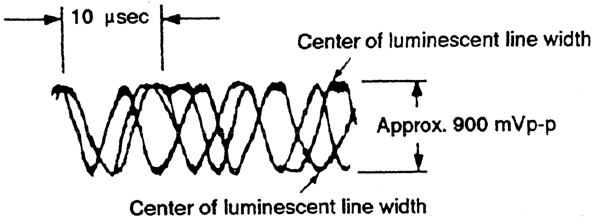

10 µsec
Center of luminescent line width
Approx. 900 mVp-p
Center of luminescent line width

Fig. 9-5. REC ATF level checking

9-3-3. Switching Position Adjustment (CO-2 Board)

Mode	Playback
Signal	Alignment tape: For operation checking (WR5-5NSP)
Measurement Point	CH-1: J201 (video output) on CV-8 board CH-2: Pin ④ (RF SWP) of CN102
Measuring Instrument	Oscilloscope
Adjustment Element	RV501
Specified Value	6.5 ± 0.3H (410 ± 20 µs)

Connections:

1) Connect Pin ③ (TEST A) and Pin ② (GND) of CN508 on the VK-3 board using a jumper wire. (Test 1 mode)

Adjustment method:

1) Adjust with RV501 so that it becomes 6.5 ± 0.3H (410 ± 20 µs).

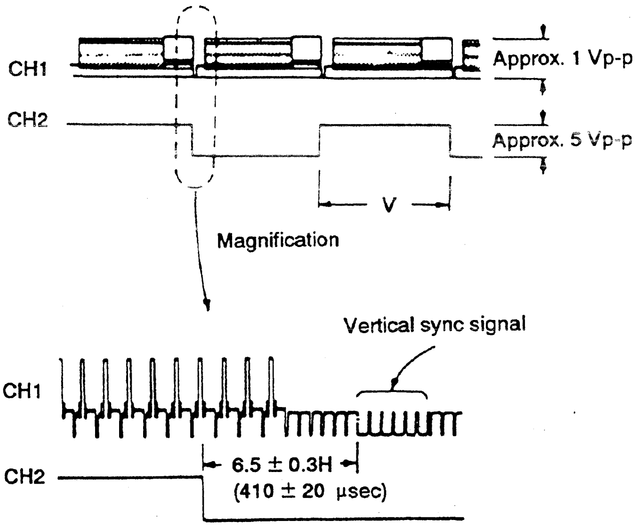

CH1
CH2
Approx. 1 Vp-p
Approx. 5 Vp-p
V
Magnification
Vertical sync signal
CH1
CH2
6.5 ± 0.3H
(410 ± 20 µsec)

Fig. 9-6. Switching position adjustment

9-3-4. Capstan FG Adjustment (CO-2 Board)

Mode	Playback (LP)
Signal	Alignment tape: For operation checking (WR5-4NL)
Measurement Point	Pin ① of IC510
Measuring Instrument	Oscilloscope
Adjustment Element	RV502
Specified Value	Minimum amplitude

Adjustment method:

1) Adjust RV502 so there is minimum amplitude of the output waveform (capstan error) from Pin ① of IC510.

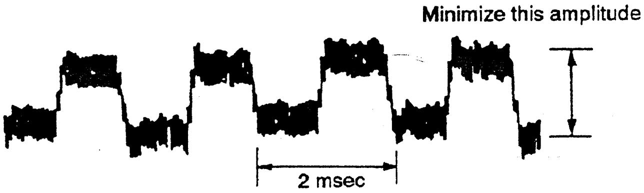


Fig. 9-7. Capstan FG adjustment

9-3-5. Still Adjustment (CV-8 Board)

Mode	Playback pause
Signal	Self-recorded tape of color bars signal
Measurement Point	Monitor TV screen
Measuring Instrument	
Adjustment Element	RV552
Specified Value	No noise on monitor TV screen except for upper and lower 1/3 sections.

Adjustment method:

1) Play back the self-recorded tape and press the PAUSE button to set the playback pause mode after the image has stabilized.
2) Confirm that the noise on the monitor screen is confined to the upper and lower 1/3 sections.
3) If the specified condition is not satisfied, adjust RV552 and repeat 1) and 2).

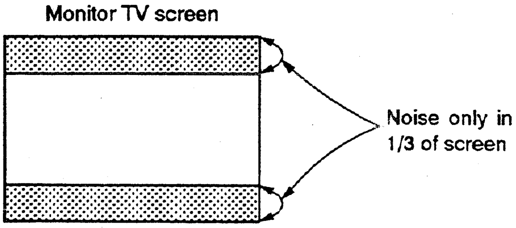


Fig. 9-8. Still adjustment

9-4. VIDEO BLOCK ADJUSTMENT

The adjustment of the video system should in principle follow the adjustment procedure outlined below.
The color video signal supplied from the pattern generator is utilized as the video input signal for video system adjustment in the recording mode. Make sure that the sync signal and color burst signal match the specifications given in set-up for adjustment, as shown in Fig. 9-2.

[Adjustment procedure]

1) Playback frequency characteristics adjustment
2) Flying erase check
3) Crystal oscillator fo adjustment
4) Y/C separation adjustment
5) IR2 adjustment
6) SYNC AGC adjustment
7) Emphasis input level adjustment
8) PB Y level adjustment
9) Y FM carrier frequency adjustment
10) Y FM deviation adjustment
11) Chroma emphasis fo adjustment
12) REC Y level adjustment
13) REC C level adjustment
14) DDS character position adjustment
15) Character generator fo adjustment

9-4-1. Playback Frequency Characteristics Adjustment (CO-2 Board)

1. CH1, CH2 adjustment

The adjusting element for CH2 is shown in parentheses [ ].

Mode	Playback
Signal	Alignment tape: For frequency characteristics adjustment (WR5-6N)
Measurement Point	Pin ③ of CN102 External trigger: Pin ④ of CN102 Trigger slope: +, [–]
Measuring Instrument	Oscilloscope
Adjustment Element	RV101 [RV102]
Specified Value	3.58 MHz level : 5.5 MHz level=4 : 3

Adjustment method:

1) Adjust RV101 [RV102] so that the ratio of the 3.58 MHz level to the 5.5 MHz level is 4 : 3 [4 : 3].

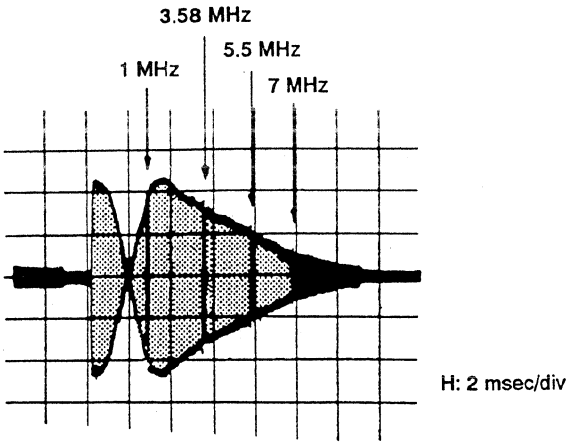


Fig. 9-9. Playback frequency characteristics adjustment

9-4-2. Flying Erase Check (CO-2 Board)

Mode	Recording
Signal	Arbitrary
Measurement Point	Pin ⑫ of CN101 (TP103: FE (X))
Measuring Instrument	Oscilloscope and frequency counter
Specified Value	Frequency: Over 7.5 MHz Voltage: Over 7.0 Vp-p

Note: Be sure to use MP type tape. (Pin ⑪ of CN501 should be "L".)

Checking method:

1) Confirm that the oscillation frequency is over 7.5 MHz and the oscillation voltage is over 7.0 Vp-p.

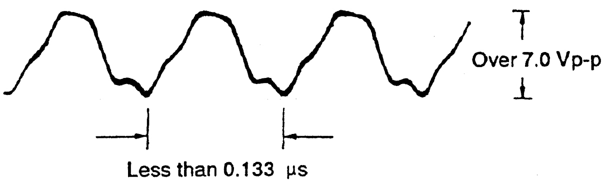


Fig. 9-10.

9-4-3. Crystal Oscillator f_0 Checking (CV-8 Board)

Mode	Playback
Signal	Alignment tape: For operation checking (WR5-5NSP)
Measurement Point	Pin ㉕ of IC202
Measuring Instrument	Frequency counter
Specified Value	3579545 ± 70 Hz

Note: Connect the frequency counter through a buffer having high impedance (approx. 10 MΩ) and low capacitance (less than 10 pF).

Checking method:

1) Confirm that the oscillation frequency at Pin ㉕ of IC202 is 3579545 ± 70 Hz.

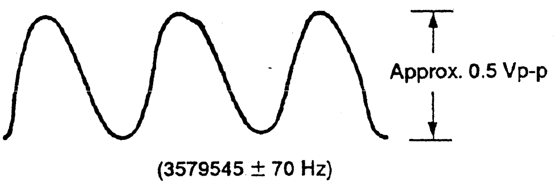


Fig. 9-11. Crystal oscillator f_0 adjustment

9-4-4. Y/C Separation Adjustment (CV-8 Board)

Mode	Recording
Signal	Color bars
Measurement Point	Any terminal of RV204 (DEV) (Pin ㉕ of IC203)
Measuring Instrument	Oscilloscope
Adjustment Element	RV202
Specified Value	Minimum residual chroma component

Connections:

1) Connect Pin ㊴ of IC203 (Pin ⑮ of IC202) to GND with a 10 μF/16V electrolytic capacitor. (Capacitor negative side to GND)

Adjustment method:

1) Set the residual chroma component to minimum with RV202.

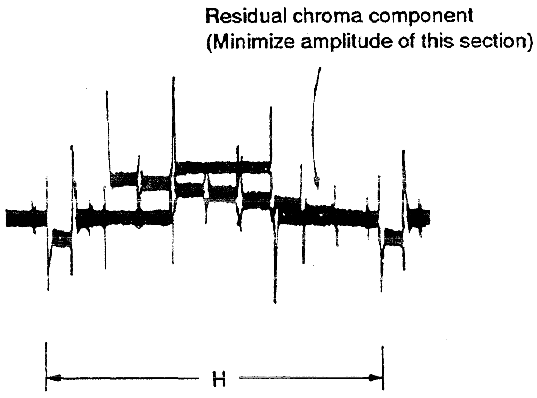


Fig. 9-12. Y/C separation adjustment

9-4-5. IR2 Adjustment (CV-8 Board)

Mode	Recording
Signal	Color bars
Measurement Point	CH1: Pin ⑤ of IC203 (REC C RF OUT) CH2: Pin ⑧ of IC203 or base of Q252 (BF OUT)
Measuring Instrument	Oscilloscope
Adjustment Element	RV203
Specified Value	a=b (see Fig. 9-13)

Adjustment method:

1) Line up the falling edge (˥_) of the CH2 burst pulse with the center of the CH1 burst signal using RV203. (See Fig. 9-13.)

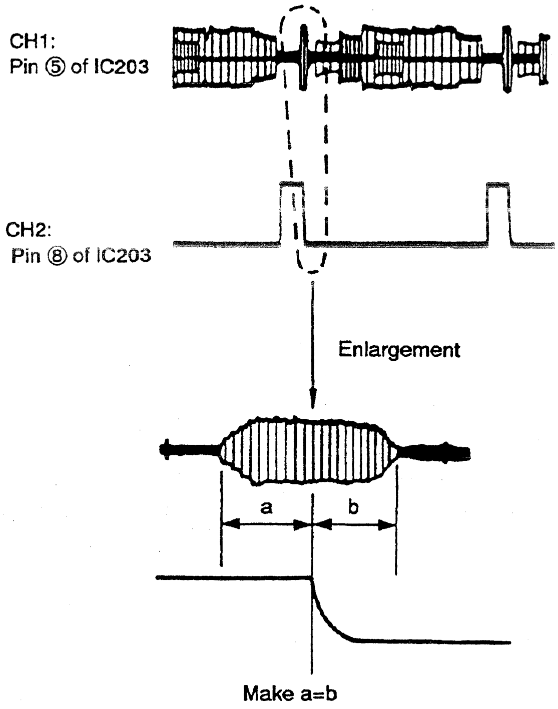


Fig. 9-13. IR2 adjustment

9-4-6. SYNC AGC Adjustment (CV-8 Board)

Mode	Recording
Signal	Color bar
Measurement Point	Pin ㊾ of IC203
Measuring Instrument	Oscilloscope
Adjustment Element	RV201
Specified Value	0.50 ± 0.025 Vp-p

Adjustment method:

1) Adjust with RV201 so that it becomes 0.50 ± 0.025 Vp-p.

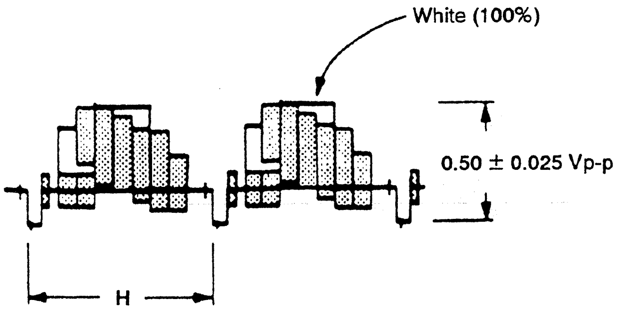


Fig. 9-14. SYNC AGC adjustment

9-4-7. Emphasis Input Level Adjustment (CV-8 Board)

Mode	Recording
Signal	Color bar
Measurement Point	Pin (54) of IC203
Measuring Instrument	Oscilloscope
Adjustment Element	RV209
Specified Value	0.50 ± 0.025 Vp-p

Adjustment method:

1) Adjust with RV209 so that it becomes 0.50 ± 0.025 Vp-p.

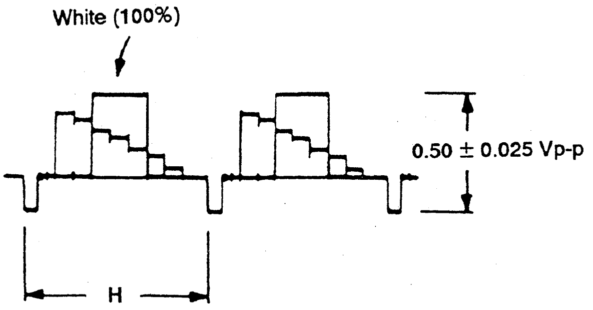


Fig. 9-15. Emphasis input level adjustment

9-4-8. PB Y Level Adjustment (CV-8 Board)

Mode	Playback
Signal	Alignment tape: For operation checking (WR5-5NSP) Color bar section
Measurement Point	J201 (VIDEO OUT)
Measuring Instrument	Oscilloscope
Adjustment Element	RV206
Specified Value	1.00 ± 0.05 Vp-p

Note: Terminate VIDEO OUT (J201) at 75Ω .

Adjustment method:

1) Adjust with RV206 so that it becomes 1.00 ± 0.05 Vp-p.

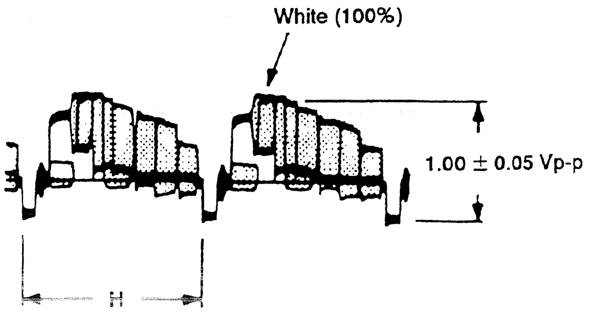


Fig. 9-16. PB Y level adjustment

9-4-9. Y FM Carrier Frequency Adjustment (CV-8 Board)

Mode	Recording
Signal	No signal
Measurement Point	Emitter of Q232 side terminal of RV207 (REC Y)
Measuring Instrument	Frequency counter
Adjustment Element	RV205
Specified Value	4.38 ± 0.04 MHz

Adjustment method:

1) Adjust to 4.38 ± 0.04 MHz with RV205.
2) Perform "Deviation Adjustment".

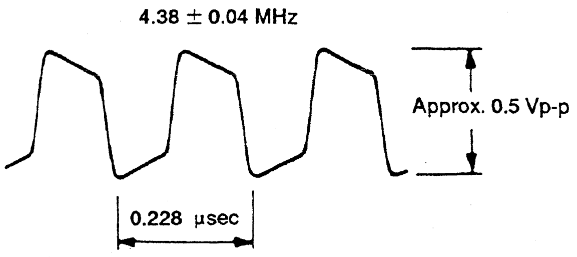


Fig. 9-17. Y FM carrier frequency adjustment

9-4-10. Y FM Deviation Adjustment (CV-8 Board)

Mode	Recording and playback
Signal	Color bar
Measurement Point	J201 (VIDEO OUT)
Measuring Instrument	Oscilloscope
Adjustment Element	RV204
Specified Value	Playback level is 1.00 ± 0.05 Vp-p

Notes: 1) Confirm that "PB Y Level Adjustment" and "Y FM Carrier Frequency Adjustment" have been completed.
2) Terminate VIDEO OUT (J201) at 75Ω .

Adjustment method:
1) Record the color bar signal.
2) Playback the recorded signal.
3) Confirm the playback output.
Specified value: 1.00 ± 0.05 Vp-p
4) If the specified value is not satisfied, repeat 1) to 3) after turning RV204 in the following manner.

	Rotation direction of RV204
When larger than specified value	Clockwise (↻)
When smaller than specified value	Counterclockwise (↺)

Table 9-1.

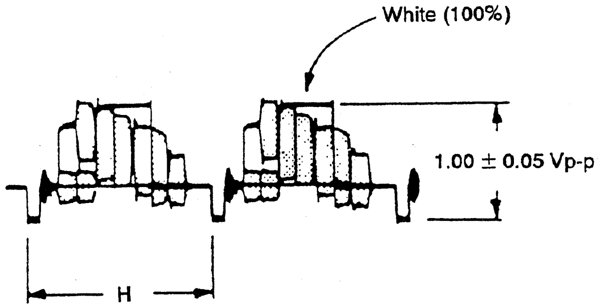

White (100%)
1.00 ± 0.05 Vp-p
H

Fig. 9-18. Y FM deviation adjustment

9-4-11. Chroma Emphasis fo Adjustment (CV-8 Board)

Mode	Recording
Signal	Color bar
Measurement Point	Center terminal of RV208 (REC C)
Measuring Instrument	Oscilloscope
Adjustment Element	FL202
Specified Value	Minimum fo component

Adjustment method:
1) Adjust with FL202 so that amplitude of the flat section of the chroma signal REC section becomes minimum.

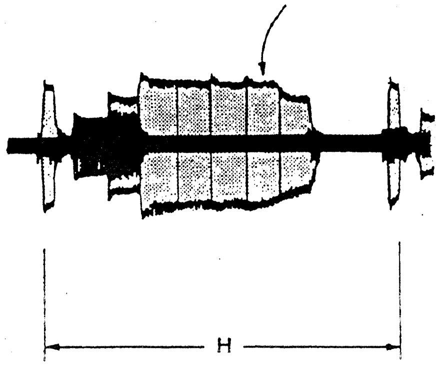

Minimize amplitude of flat section of chroma signal RED section
H

Fig. 9-19. Chroma emphasis fo adjustment

9-4-12. REC Y Level Adjustment (CV-8 Board)

Mode	Recording
Signal	No signal
Measurement Point	Emitter of Q230 (Pin ⑯ of CN502)
Measuring Instrument	Oscilloscope
Adjustment Element	RV207
Specified Value	265 ± 10 mVp-p

Adjustment method:
1) Adjust with RV207 so that it becomes 265 ± 10 mVp-p.

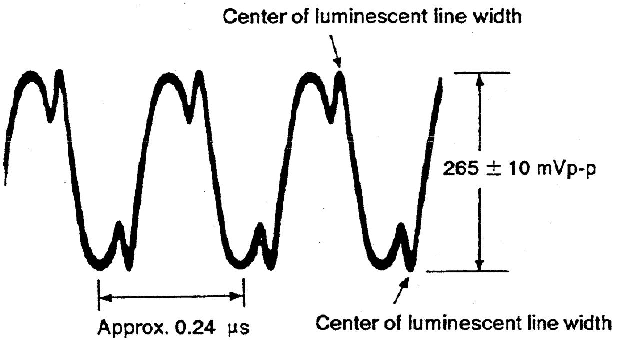

Center of luminescent line width
265 ± 10 mVp-p
Approx. 0.24 μs
Center of luminescent line width

Fig. 9-20. REC Y Level Adjustment

9-4-13. REC C Level Adjustment (CV-8 Board)

Mode	Recording
Signal	Color bar
Measurement Point	Emitter of Q233 (Pin ⑱ of CN502)
Measuring Instrument	Oscilloscope
Adjustment Element	RV208
Specified Value	105 ± 10 mVp-p

Adjustment method:

1) Adjust with RV208 so that it becomes 105 ± 10 mVp-p.

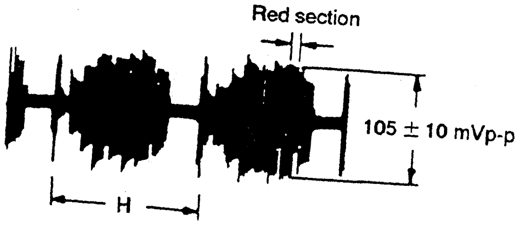


Fig. 9-21. REC C level adjustment

9-4-14. DDS Character Position Adjustment (CV-8 Board)

Mode	Playback
Signal	Alignment tape: For operation checking (WR5-5NSP) Color bar section
Measurement Point	Confirm on monitor TV screen
Measuring Instrument	
Adjustment Element	CV501
Specified Value	See Fig. 9-22.

Adjustment method:

1) Press the data screen button for indication of the counter on the monitor TV screen.
2) Adjust CV501 until the right inner contour of the number at the right side of the count indication is lined up with the border line between the red and blue color bars.

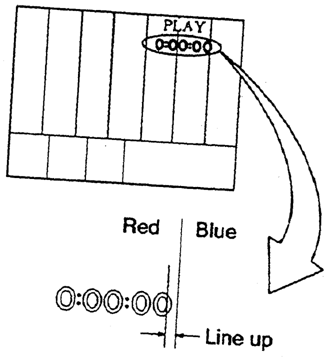


Fig. 9-22.

9-4-15. Character Generator f_0 Adjustment (CV-8 Board)

Mode	E-E
Signal	Non-signal
Measurement Point	Pin ⑲ of IC501
Measuring Instrument	Frequency counter
Adjustment Element	CV502
Specified Value	15734 ± 100 Hz

Adjustment method:

1) Adjust CV502 so that it becomes 15734 ± 100 Hz.

9-5. AUDIO SYSTEM ADJUSTMENT

- Perform adjustment with the color bar signal used as the video input signal.

[Connection of audio measuring instruments]

In addition to the video system measuring instruments, connect the audio system measuring instruments as shown in the figure below, and set the power switch to the video position for adjustment.

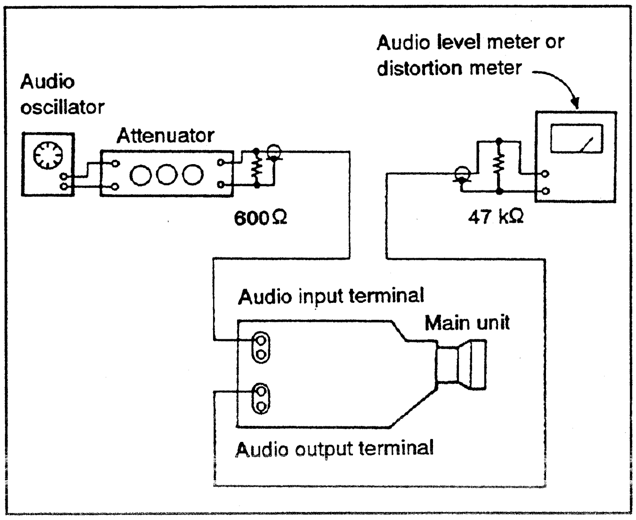

Audio level meter or distortion meter
Audio oscillator
Attenuator
600Ω
47 kΩ
Audio input terminal
Main unit
Audio output terminal

Fig. 9-23.

9-5-1. AFM Carrier Frequency Check (CO-2 Board)

Mode	Recording
Signal	Non-signal
Measurement Point	Pin ㉑ of IC401(REC AFM)
Measuring Instrument	Frequency counter
Specified Value	1.50 ± 0.01 MHz

Note: Connect the frequency counter through a buffer amplifier (oscilloscope, etc.) having high impedance and low capacitance.

Checking method:
1) Turn OFF the audio oscillator output.
2) Confirm that the AFM carrier frequency is 1.50 ± 0.01 MHz.

9-5-2. REC AFM Carrier Level Adjustment (CO-2 Board)

Mode	Recording
Signal	Non-signal
Measurement Point	Pin ㉑ of IC401 (REC AFM)
Measuring Instrument	Oscilloscope
Specified Value	160 ± 5 mVp-p

Checking method:
1) Confirm that the level is 160 ± 5 mVp-p.

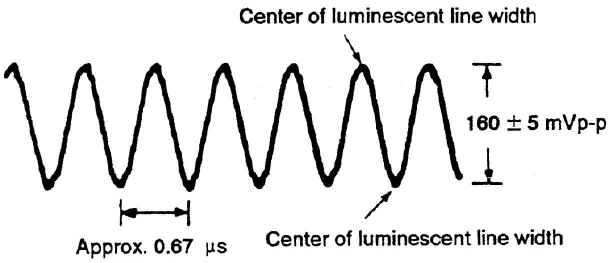

Center of luminescent line width
160 ± 5 mVp-p
Approx. 0.67 μs
Center of luminescent line width

Fig. 9-24. REC AFM recording current adjustment

9-5-3. Playback Level Check

Mode	Playback
Signal	Alignment tape: Operation checking (WR5-5NSP)
Measurement Point	Audio output terminal
Measuring Instrument	Audio level meter
Specified Value	–7.5 ± 2 dBs

Checking method:
1) Confirm that the audio output level is –7.5 ± 2 dBs.

9-5-4. E-E Output Level Check

Mode	E-E
Signal	400 Hz, –7.5 dBs
Measurement Point	Audio output terminal
Measuring Instrument	Audio level meter
Specified Value	–7.5 ± 2 dBs

Checking method:
1) Make sure that the audio output level is –7.5 ± 2 dBs.

9-5-5. Overall Level Characteristics Check

Mode	Self-recording and playback
Signal	400 Hz, –7.5 dBs
Measurement Point	Audio output terminal
Measuring Instrument	Audio level meter
Specified Value	–7.5 ± 3 dBs

Checking method:
1) Record the signal.
2) Playback the recorded section.
3) Make sure that the audio output level is –7.5 ± 3 dBs.

9-5-6. Overall Frequency Characteristics Check

Mode	Self-recording and playback
Signal	Ⓐ 400 Hz, –17.5 dBs Ⓑ 30 Hz, –17.5 dBs Ⓒ 10 Hz, –17.5 dBs
Measurement Point	Audio output terminal
Measuring Instrument	Audio level meter
Specified Value	With the 400 Hz playback output level as 0 dB, the playback output level of 30 Hz and 14 kHz is 0 ± 3 dB

Checking method:
1) Record signal Ⓐ through Ⓒ in order.
2) Playback the recorded sections.
3) With the 400 Hz playback output level as 0 dB, confirm that the playback output level of 30 Hz and 14 kHz is 0 ± 3 dB.

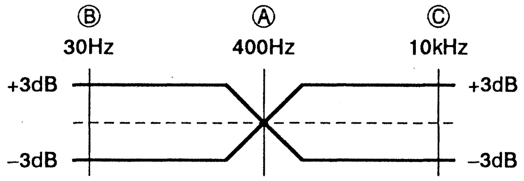


Fig. 9-25. AFM overall frequency characteristics

9-5-7. Overall Distortion Check

Mode	Self recording and playback
Signal	400 Hz, –7.5 dBs
Measurement Point	Audio output terminal
Measuring Instrument	Distortion meter
Specified Value	Less than 0.5% [*1]

Checking method:
1) Record the signal.
2) Playback the recorded section.
3) Confirm that the distortion is less than 0.5%. [*1]

[*1] Value when 200 Hz – 6 kHz BPF is used

9-5-8. Overall Noise Level Check

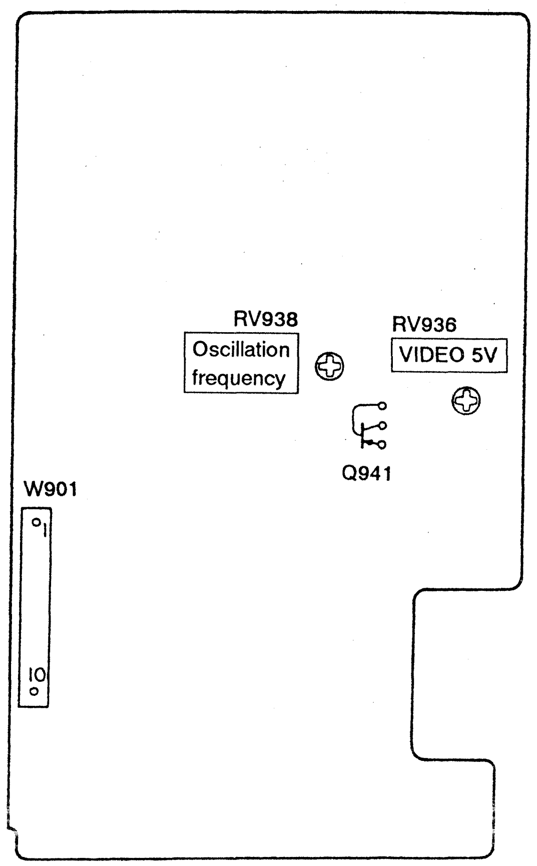
Mode	Self-recording and playback
Signal	No signal (shorting plug is inserted into audio input jack)
Measurement Point	Audio input terminal
Measuring Instrument	Audio level meter
Specified Value	Less than –67 dBs[*2]

Checking method:
1) Record the signal.
2) Playback the recorded section.
3) Make sure that the noise level is less than –67 dBs. [*2]

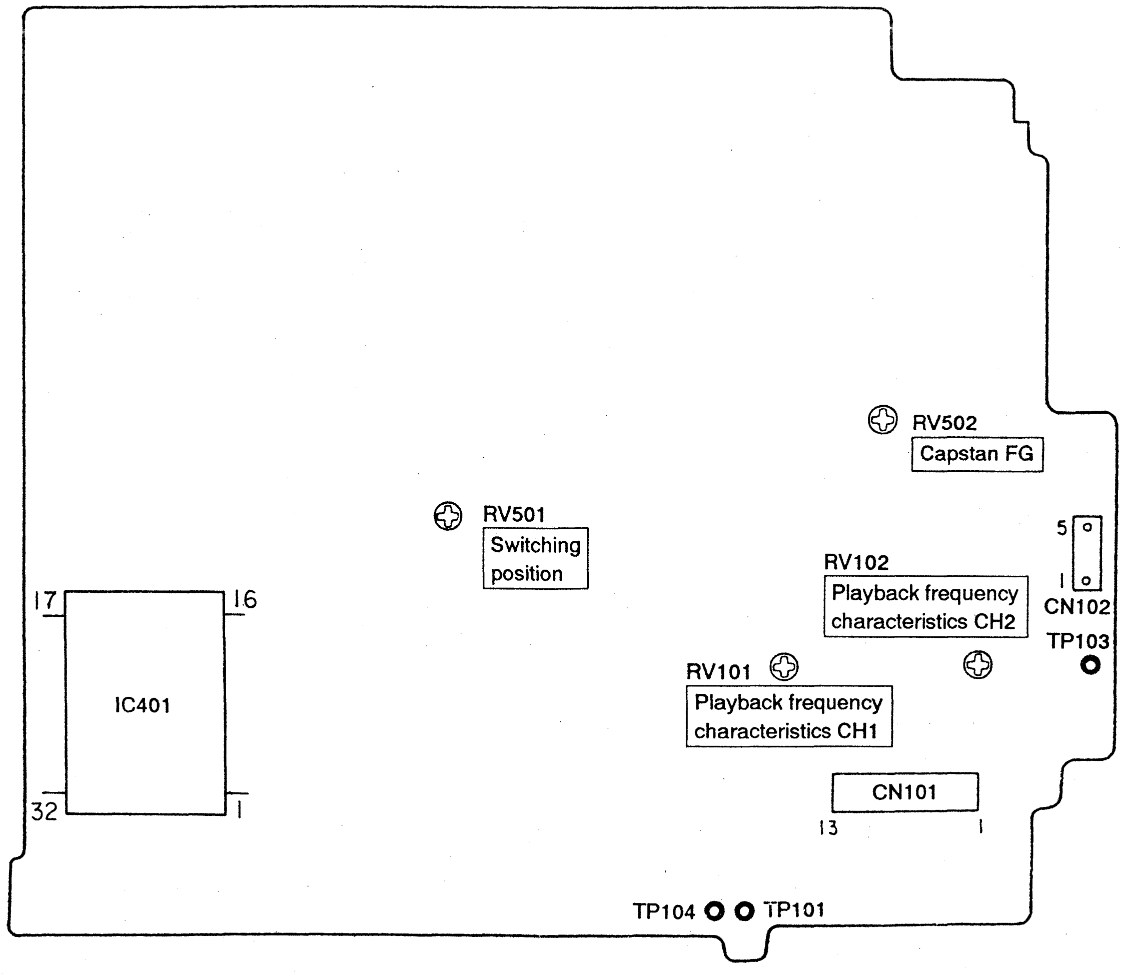
[*2] Value when IHF-A hearing correction filter is used.

9-6. ADJUSTMENT ELEMENTS LOCATION

PS-225 BOARD (COMPONENT SIDE)

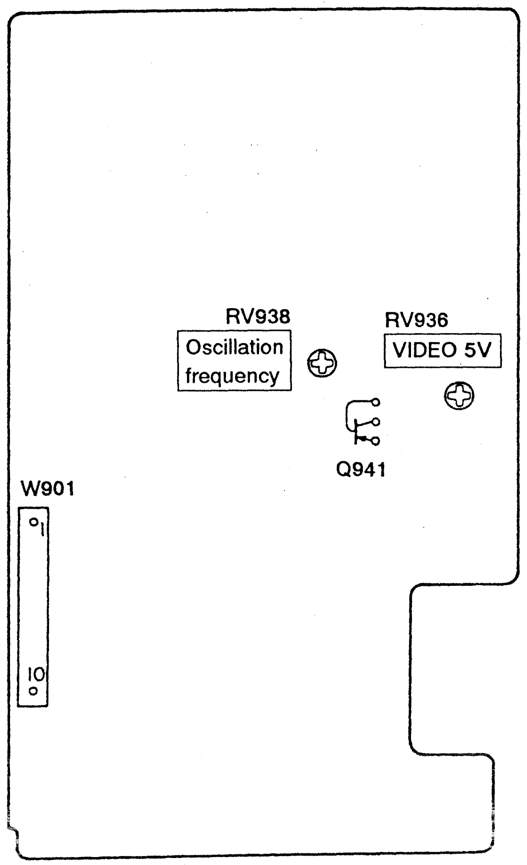

RV938
Oscillation frequency
RV936
VIDEO 5V
Q941
W901
1
10

CO-2 BOARD (CONDUCTOR SIDE)

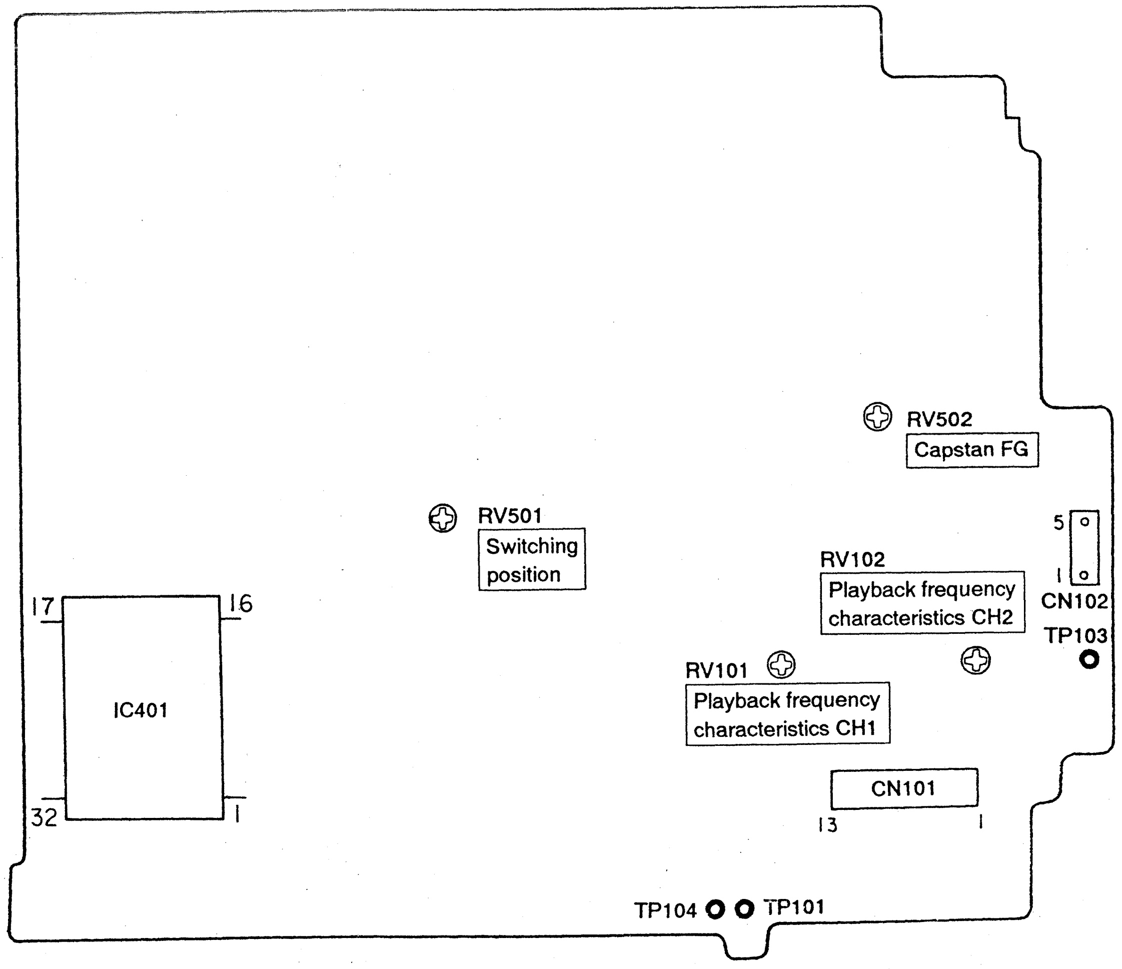

RV502
Capstan FG
RV501
Switching position
5
1
CN102
RV102
Playback frequency characteristics CH2
TP103
17
16
IC401
32
1
RV101
Playback frequency characteristics CH1
CN101
13
1
TP104
TP101

9-6. ADJUSTMENT ELEMENTS LOCATION

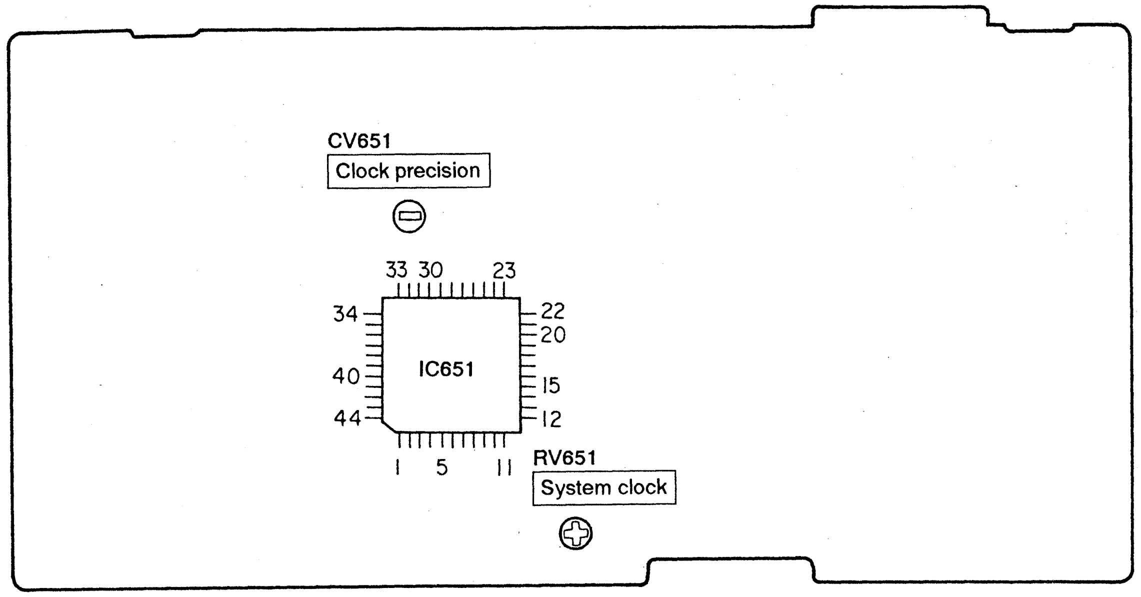
PS-225 BOARD (COMPONENT SIDE)


RV938
Oscillation frequency
RV936
VIDEO 5V
Q941
W901
1
10

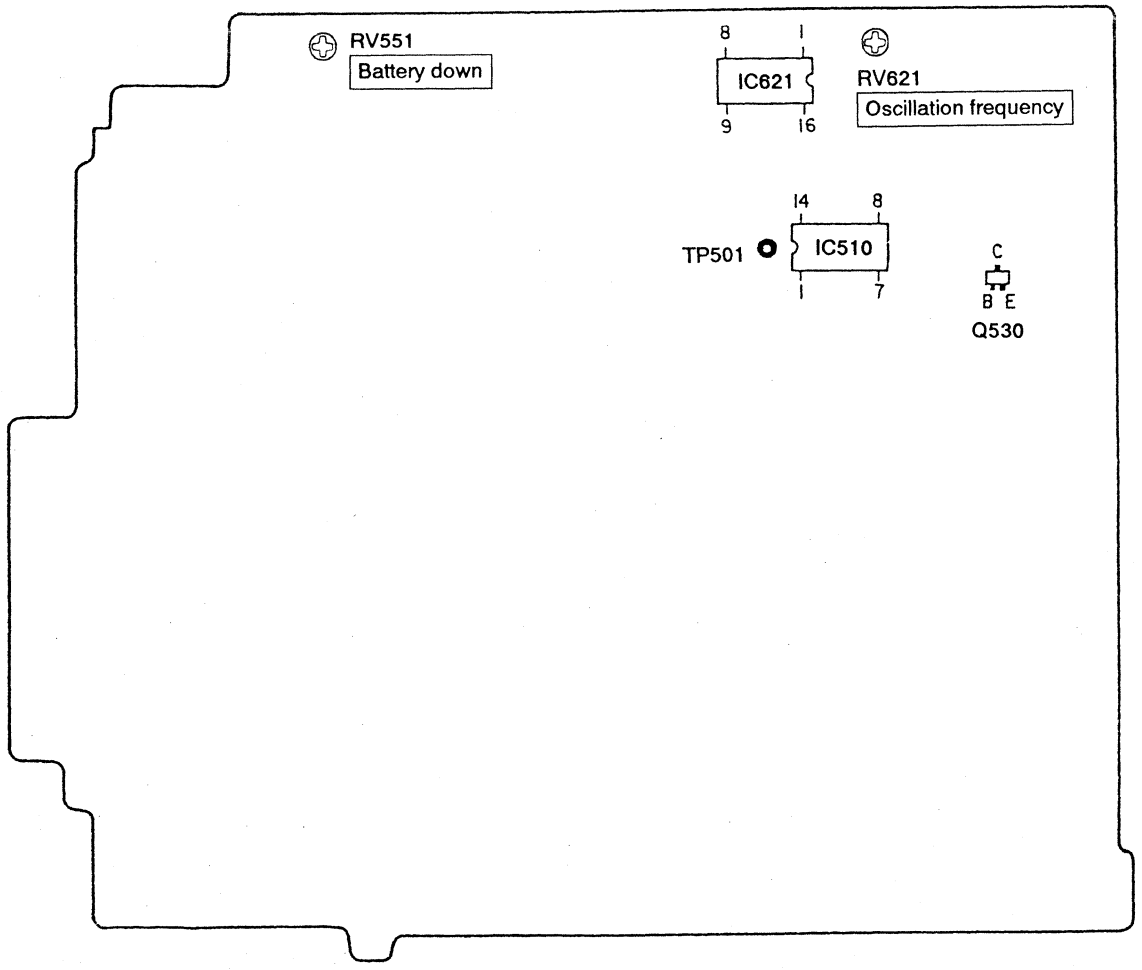
CO-2 BOARD (CONDUCTOR SIDE)


RV502
Capstan FG
RV501
Switching position
5
1
CN102
RV102
Playback frequency characteristics CH2
TP103
RV101
Playback frequency characteristics CH1
17
16
IC401
32
1
CN101
13
1
TP104
TP101

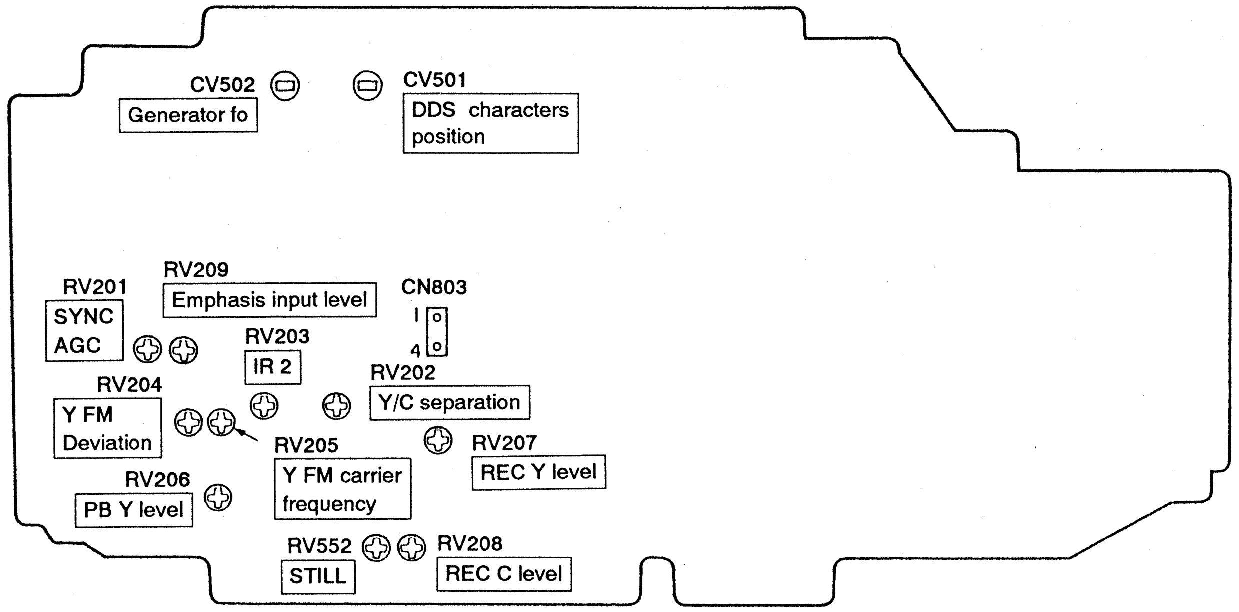
CK-19 BOARD (COMPONENT SIDE)


CV651
Clock precision
33 30 23
34
22
20
IC651
40
15
44
12
1 5 11
RV651
System clock

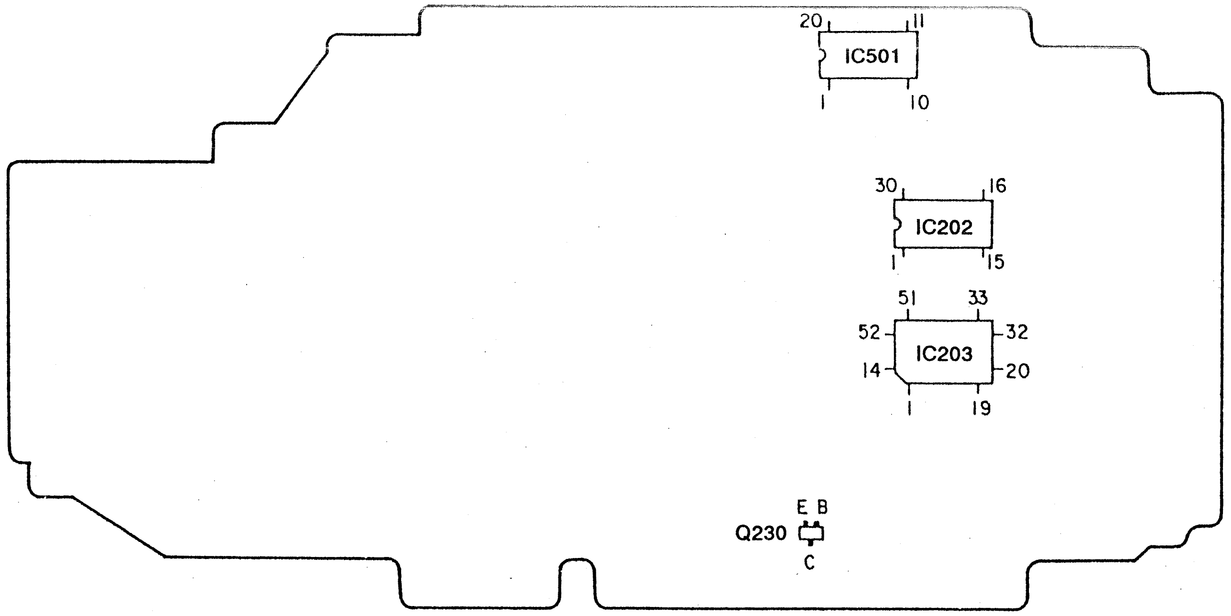
CO-2 BOARD (COMPONENT SIDE)

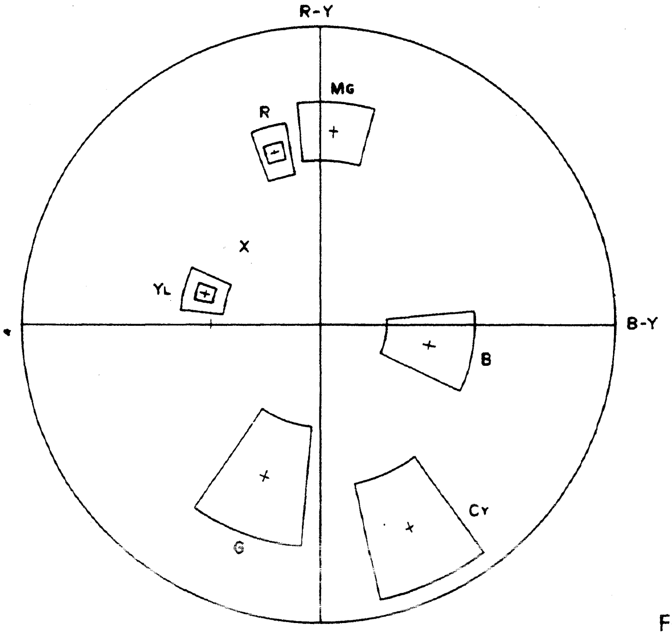

RV551
Battery down
8 1
IC621
9 16
RV621
Oscillation frequency
14 8
TP501
IC510
1 7
C
B E
Q530

CV-8 BOARD (COMPONENT SIDE)

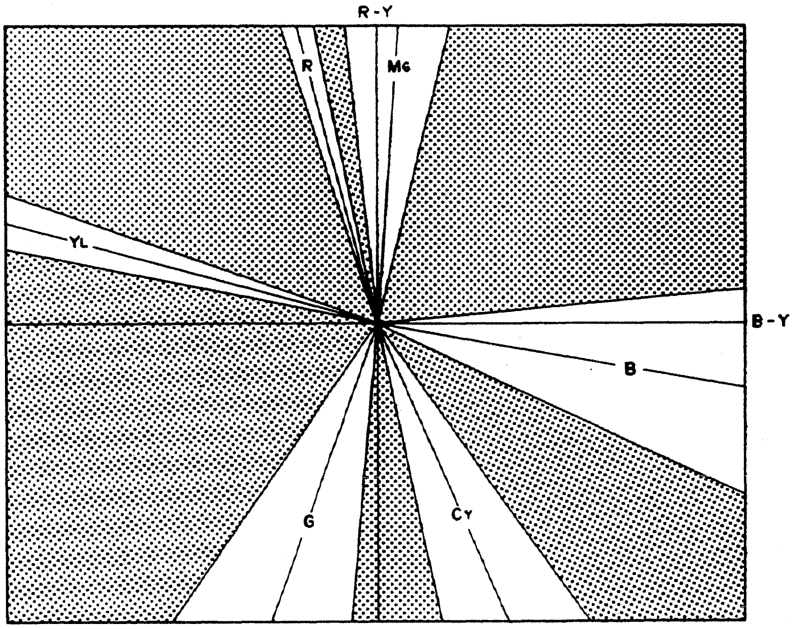

CV502
Generator fo
CV501
DDS characters position
RV201
SYNC AGC
RV209
Emphasis input level
CN803
1
4
RV203
IR 2
RV202
Y/C separation
RV204
Y FM Deviation
RV205
Y FM carrier frequency
RV207
REC Y level
RV206
PB Y level
RV552
STILL
RV208
REC C level

CV-8 BOARD (CONDUCTOR SIDE)


IC501
20
11
1
10
IC202
30
16
1
15
IC203
51
33
52
32
14
20
1
19
Q230
E B
C


R-Y
MG
R
X
YL
B-Y
B
G
CY

For Vectorscope


R-Y
R
MG
YL
B-Y
B
G
CY

For Oscilloscope

CCD-F45/F46
CCD-F380
CCD-F360

CCD-F45/F46/F360

SONY

SERVICE MANUAL

US Model
CCD-F45/F46
Canadian Model
CCD-F45
E Model
CCD-F360

SUPPLEMENT-1

File this supplement with the Service Manual.

Subject : CRT change of type B viewfinder (CCD-F45 only)

- CRT of type B viewfinder is changed from Serial No.77930 and later(CCD-F45). According to this change, some parts mounted on VF-22 board are also changed.

- VF-22 board has already been changed from part number suffix -11 to -12. This Supplement-1 also contains it.

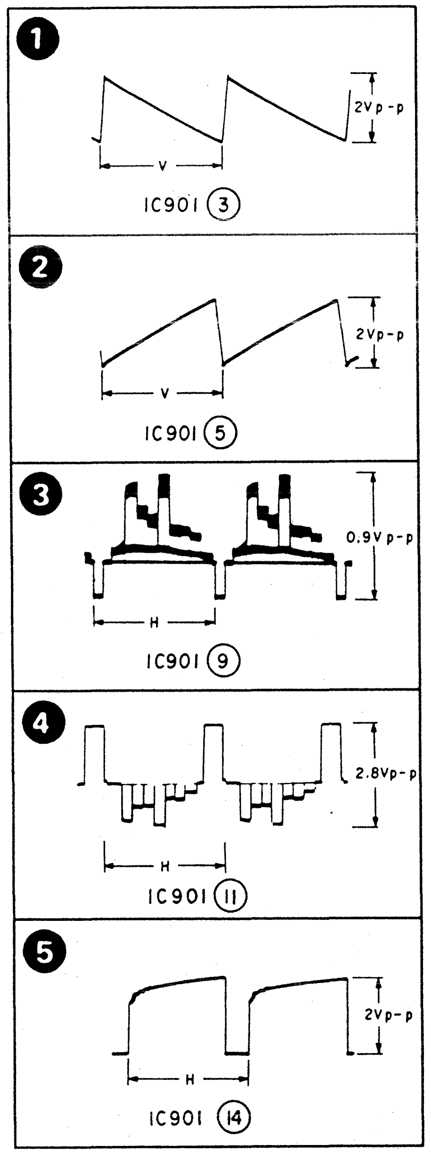
CORRECTION ☛ : corrected portion.
Page. 227
7-2-31. Auto-Focus Adjustment
1. Adjustment in all black pattern (CV-8 board)
4) When FHB> 0
D42=FHB+2
☛

VF-22 (ELECTRONIC VIEW FIDER), LD-17 (TALLY LED) PRINTED WIRING BOARDS

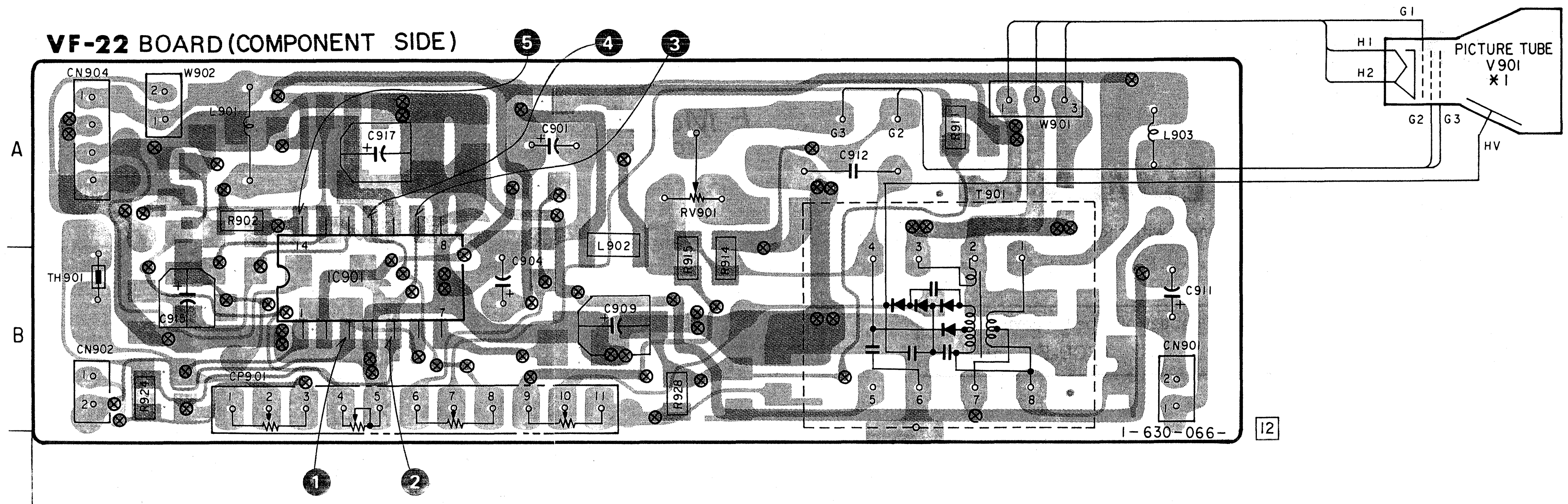
— Ref. No. VF-22 BOARD: 4000 series, LD-17 BOARD: 5000 series —

VF-22 BOARD	
D903	D-6
IC901	B-2
Q902	A-1
Q903	E-2
Q904	E-6

VF-22 BOARD

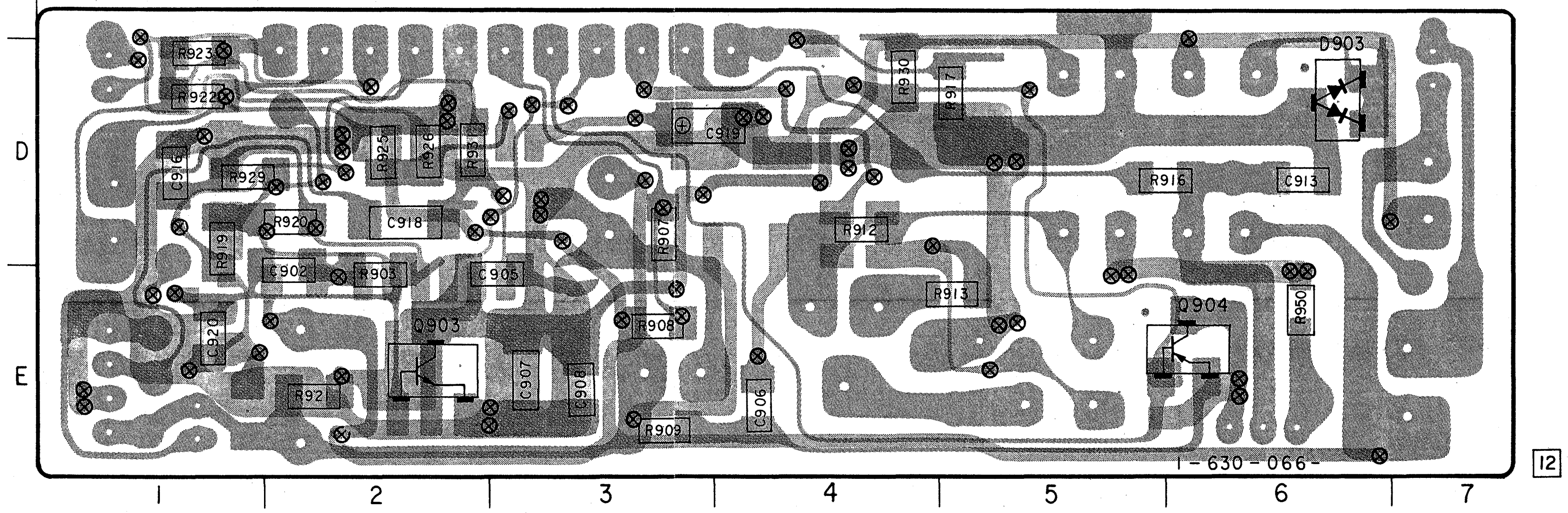


VF-22 BOARD (COMPONENT SIDE)

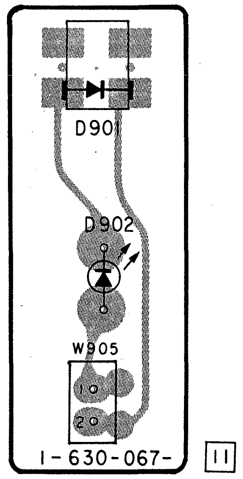

❺
❹
❸
A
B
CN904
W902
L901
C917
C901
G3
G2
C912
W901
L903
RV901
T901
R902
IC901
C904
L902
R915
R914
C909
C911
TH901
C916
CN902
R924
CP901
R928
CN901
1-630-066-
12
❶
❷
G1
H1
H2
PICTURE TUBE
V901
✱1
G2
G3
HV

C

VF-22 BOARD (CONDUCTOR SIDE)

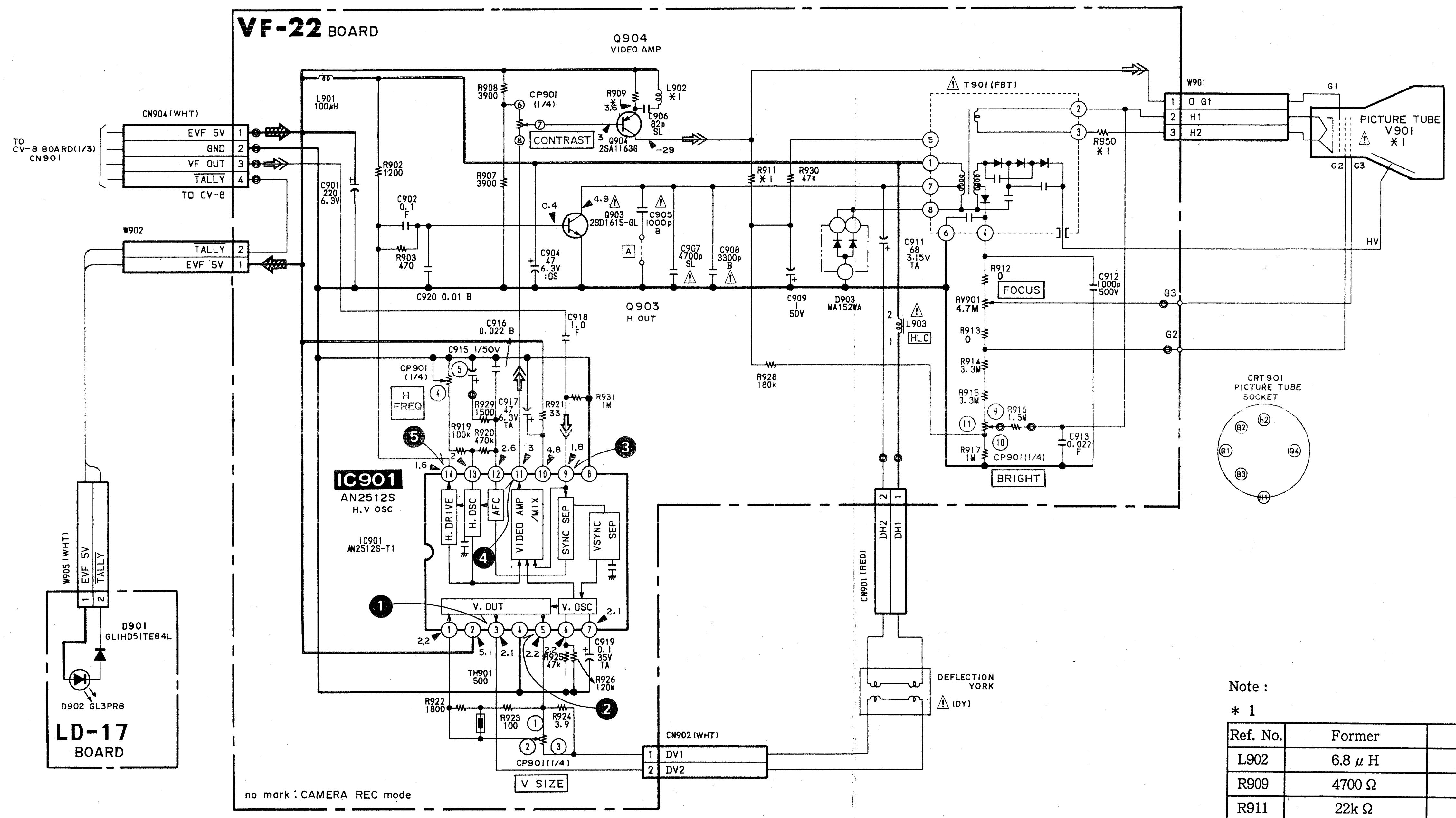

D
E
R923
R922
R930
R917
D903
C919
C916
R925
R926
R929
R916
C913
R920
C918
R912
R919
C902
R903
C905
R907
R913
Q904
R950
C920
Q903
R908
C907
C908
C906
R921
R909
1-630-066-
12
1
2
3
4
5
6
7

LD-17 BOARD

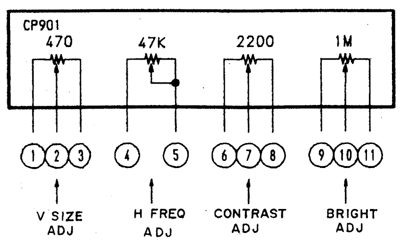

D901
D902
W905
1-630-067-
11

VF-22 (ELECTRONIC VIEW FIDER), LD-17 (TALLY LED) SCHEMATIC DIAGRAMS

— Ref. No. VF-22 BOARD: 4000 series, LD-17 BOARD: 5000 series —


VF-22 BOARD
Q904
VIDEO AMP
L901
100µH
R908
3900
CP901
(1/4)
R909
3.6
L902
*1
CONTRAST
Q904
2SA1163B
C906
82p
SL
CN904 (WHT)
EVF 5V
GND
VF OUT
TALLY
TO CV-8 BOARD(1/3) CN901
TO CV-8
R902
1200
C901
220
6.3V
C902
0.1
F
R903
470
R907
3900
Q903
2SD1615-BL
C905
1000p
B
C904
47
6.3V
C907
4700p
SL
C908
3300p
B
C920 0.01 B
Q903
H OUT
W902
TALLY
EVF 5V
T901 (FBT)
R911
*1
R930
47k
C911
68
3.15V
TA
C909
1
50V
D903
MA152WA
L903
HLC
R928
180k
R950
*1
R912
0
FOCUS
RV901
4.7M
R913
0
R914
3.3M
R915
3.3M
R916
1.5M
R917
1M
CP901 (1/4)
BRIGHT
C912
1000p
500V
C913
0.022
F
W901
G1
H1
H2
PICTURE TUBE
V901
*1
G2
G3
HV
CRT901
PICTURE TUBE
SOCKET
C916
0.022 B
C918
1.0
F
C915 1/50V
H FREQ
R929
1500
C917
47
6.3V
TA
R921
33
R931
1M
R919
100k
R920
470k
IC901
AN2512S
H.V OSC
IC901
AN2512S-T1
H.DRIVE
H.OSC
AFC
VIDEO AMP /MIX
SYNC SEP
VSYNC SEP
V.OUT
V.OSC
C919
0.1
35V
TA
R925
47k
R926
120k
TH901
500
R922
1800
R923
100
R924
3.9
CP901 (1/4)
V SIZE
CN902 (WHT)
DV1
DV2
CN901 (RED)
DH2
DH1
DEFLECTION YORK
(DY)
W905 (WHT)
EVF 5V
TALLY
D901
GL1HD51TE84L
D902 GL3PR8
LD-17
BOARD
no mark : CAMERA REC mode

CP901


CP901
470
47K
2200
1M
①②③
④
⑤
⑥⑦⑧
⑨⑩⑪
V SIZE ADJ
H FREQ ADJ
CONTRAST ADJ
BRIGHT ADJ

Note :

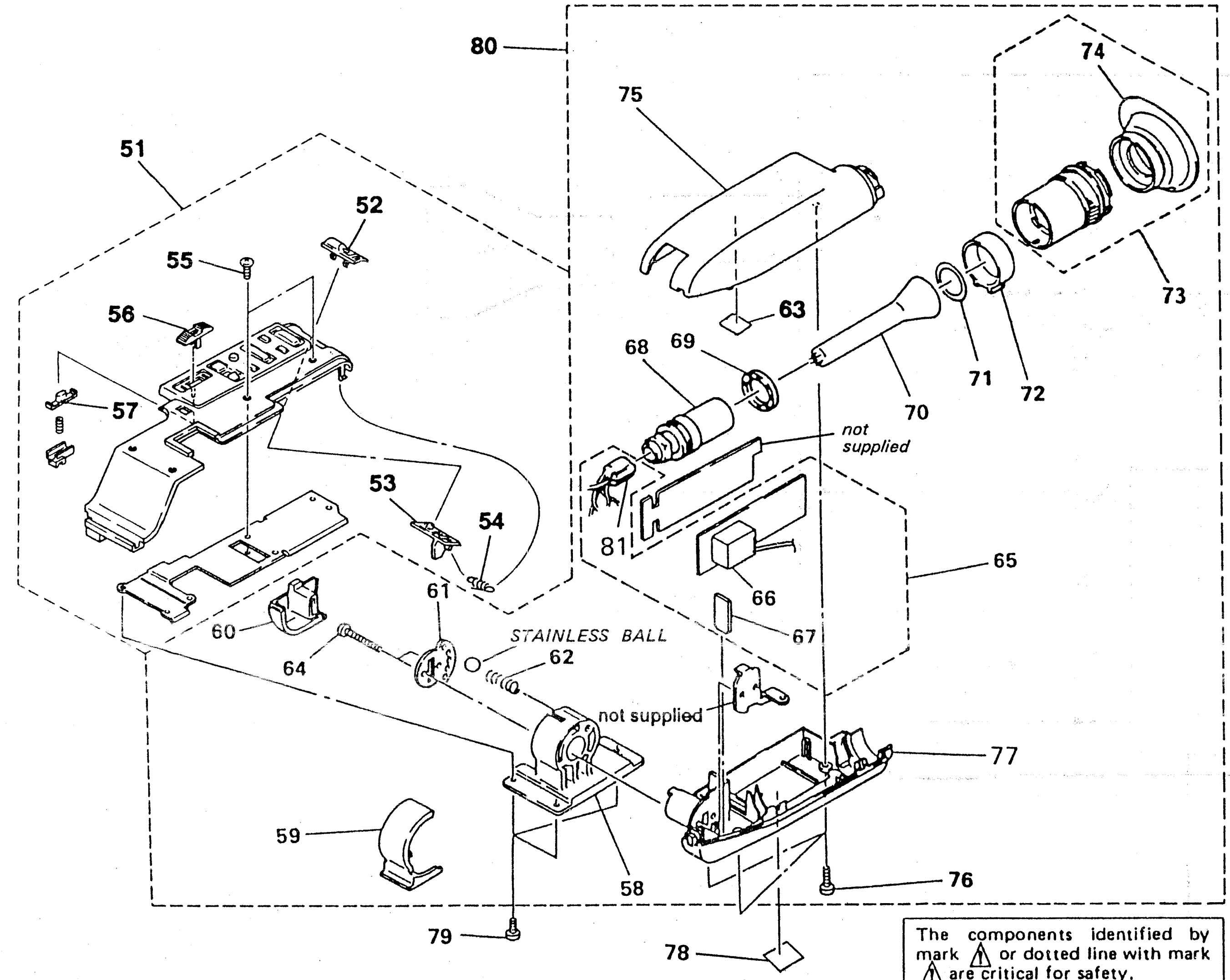
＊1

Ref. No.	Former	New
L902	6.8 µH	22 µH
R909	4700 Ω	3300 Ω
R911	22k Ω	18k Ω
R950	0 Ω	6.8 Ω
V901	M01JVV47WB	M01KGG007WB

- Signal path

	VIDEO Signal			AUDIO Signal
	CHROMA	Y	Y/CHROMA	
REC				
PB		⇨		

5-3. CABINET (UPPER), EVF ASSEMBLY (TYPE B)



The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

No.	Part No.	Description	Remark
51	X-3733-925-1	CABINET (UPPER) ASSY (CCD-F45/F360)	52-57
	X-3733-945-1	CABINET (UPPER) ASSY (CCD-F46)	52-57
52	3-732-919-01	BUTTON, EJECT (CCD-F45/F360)	
	*3-732-919-11	BUTTON, EJECT (CCD-F46)	
53	3-732-920-01	LOCK, EJECT	
54	3-669-440-00	SPRING, TENSION	
55	3-719-381-01	SCREW (M2X4)	
56	3-718-226-01	BUTTON, POWER	
57	*3-718-257-11	BUTTON, PUSH, POWER	
58	*3-732-944-01	BEARING, EVF	
59	3-732-950-01	BLIND, EVF	
60	3-732-949-01	BLIND, EVF CABINET (LOWER)	
61	3-732-947-01	PLATE, LOCK	
62	3-732-946-01	SPRING, COMPRESSION	
63	3-704-233-01	LABEL, CAUTION, HIGH VOLTAGE	
64	3-732-987-01	SCREW (M2X20), +P	
65	*A-7061-558-A	VF-22 BOARD, COMPLETE (FORMER TYPE)	66, 67, 81
	*A-7061-558-B	VF-22 BOARD, COMPLETE (NEW TYPE)	66, 67, 81
66	⚠.1-439-428-11	TRANSFORMER ASSY, FLYBACK (T901)	
67	*1-630-067-11	LD-17 BOARD	
68	⚠.1-451-310-21	DEFIECTION YOKE (B/W)	
69	3-724-549-01	LOCK, CRT	
70	⚠.1-546-065-11	CATHODE-RAY TUBE, B/W (FORMER TYPE)	
	⚠.1-546-085-11	CATHODE-RAY TUBE, B/W (NEW TYPE)	
71	3-724-570-01	RING, CRT FIXED	
72	X-3724-509-1	HOLDER ASSY, CRT	
73	A-7080-715-A	HOLDER BLOCK ASSY, FINDER	74
74	3-733-922-01	EYE CUP	
75	3-732-948-01	CABINET (UPPER), EVF	
76	3-713-790-31	SCREW (M2X8), TAPPING, P3	
77	X-3732-911-1	CABINET (LOWER) ASSY, EVF	
78	3-703-848-01	LABEL (N), SUB CAUTION	
79	3-732-988-01	SCREW (M2X2.5)	
80	A-7019-151-A	EVF COMPLETE ASSY (FORMER TYPE)	58-78, 81
	A-7019-151-B	EVF COMPLETE ASSY (NEW TYPE)	58-78, 81
81	⚠.1-526-978-21	SOCKET ASSY, CRT (CRT901)	

VF-22 LD-17

Ref.No	Part No.	Description	Remark
	*A-7061-558-A	VF-22 BOARD, COMPLETE (FORMER TYPE) **********************	(Ref.No 4,000 Series)
	*A-7061-558-B	VF-22 BOARD, COMPLETE (NEW TYPE) **********************	(Ref.No 4,000 Series)
		CAPACITOR	
C901	1-126-369-11	ELECT 220MF 20%	6.3V
C902	1-163-038-00	CERAMIC CHIP 0.1MF	25V
C904	1-127-515-11	ELECT(SOLID) 47MF 20%	6.3V
C905	⚠.1-163-009-11	CERAMIC CHIP 0.001MF 10%	50V
C906	1-163-115-00	CERAMIC CHIP 82PF 5%	50V
C907	⚠.1-162-625-11	CERAMIC CHIP 0.0047MF 5%	50V
C908	⚠.1-163-015-00	CERAMIC CHIP 0.0033MF 10%	50V
C909	1-126-193-11	ELECT CHIP 1MF 20%	50V
C911	1-131-388-00	TANTALUM 68MF 10%	3.15V
C912	1-102-038-00	CERAMIC 0.001MF	500V
C913	1-163-033-00	CERAMIC CHIP 0.022MF	50V
C915	1-126-193-11	ELECT CHIP 1MF 20%	50V
C916	1-163-037-11	CERAMIC CHIP 0.022MF 10%	25V
C917	1-135-166-21	TANTAL. CHIP 47MF 20%	6.3V
C918	1-162-638-11	CERAMIC CHIP 1MF	16V
C919	1-135-070-00	TANTAL. CHIP 0.1MF 10%	35V
C920	1-164-232-11	CERAMIC CHIP 0.01MF 10%	50V
		CONNECTOR	
CN901	*1-566-195-21	PIN, CONNECTOR (PC BOARD) 2P	
CN902	*1-566-195-11	PIN, CONNECTOR (PC BOARD) 2P	
CN904	*1-566-759-11	PIN, CONNECTOR (PC BOARD) 4P	
		CONPOSITION CIRCUIT BLOCK	
CP901	1-238-119-11	RES, ADJ	
		SOCKET	
CRT901	1-526-978-21	SOCKET ASSY, CRT	
		DIODE	
D903	8-719-400-20	DIODE MA152WA	
		IC	
IC901	8-759-420-01	IC AN2512S	
		COIL	
L901	1-408-421-00	INDUCTOR 100UH	
L902	1-410-379-21	INDUCTOR CHIP 6.8UH (FORMER TYPE)	
L902	1-410-385-11	INDUCTOR CHIP 22UH (NEW TYPE)	
L903	⚠.1-459-858-11	COIL, FERRITE (HLC)	
		TRANSISTOR	
Q902	8-729-402-31	TRANSISTOR 2SD1819A-Q	
Q903	⚠.8-729-106-68	TRANSISTOR 2SD1615A-GP	
Q904	8-729-216-32	TRANSISTOR 2SA1163	
		RESISTOR	
R902	1-216-051-00	METAL GLAZE 1.2K 5% 1/10W	
R903	1-216-041-00	METAL GLAZE 470 5% 1/10W	
R904	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R906	1-216-051-00	METAL GLAZE 1.2K 5% 1/10W	
R907	1-216-063-00	METAL GLAZE 3.9K 5% 1/10W	
R908	1-216-063-00	METAL GLAZE 3.9K 5% 1/10W	
R909	1-216-065-00	METAL GLAZE 4.7K 5% 1/10W (FORMER TYPE)	
R909	1-216-061-00	METAL GLAZE 18K 5% 1/10W (NEW TYPE)	
R911	1-216-081-00	METAL GLAZE 22K 5% 1/10W (FORMER TYPE)	
R911	1-216-079-00	METAL GLAZE 3.3K 5% 1/10W (NEW TYPE)	

Ref.No	Part No.	Description	Remark
R912	1-216-295-00	METAL GLAZE 0 5% 1/10W	
R913	1-216-295-00	METAL GLAZE 0 5% 1/10W	
R914	1-216-133-00	METAL GLAZE 3.3M 5% 1/10W	
R915	1-216-133-00	METAL GLAZE 3.3M 5% 1/10W	
R916	1-216-125-00	METAL GLAZE 1.5M 5% 1/10W	
R917	1-216-121-00	METAL GLAZE 1M 5% 1/10W	
R919	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
R920	1-216-113-00	METAL GLAZE 470K 5% 1/10W	
R921	1-216-013-00	METAL GLAZE 33 5% 1/10W	
R922	1-216-055-00	METAL GLAZE 1.8K 5% 1/10W	
R923	1-216-025-00	METAL GLAZE 100 5% 1/10W	
R924	1-216-306-11	METAL GLAZE 3.9 5% 1/10W	
R925	1-216-336-11	METAL GLAZE 47K 1% 1/10W	
R926	1-218-163-11	METAL GLAZE 120K 1% 1/10W	
R928	1-216-870-11	METAL GLAZE 180K 1% 1/10W	
R929	1-216-053-00	METAL GLAZE 1.5K 5% 1/10W	
R930	1-216-089-00	METAL GLAZE 47K 5% 1/10W	
R931	1-216-121-00	METAL GLAZE 1M 5% 1/10W	
R950	1-216-295-00	METAL GLAZE 0 5% 1/10W (FORMER TYPE)	
R950	1-216-311-00	METAL GLAZE 6.8 5% 1/10W (NEW TYPE)	
		VARIABLE RESISTOR	
RV901	1-238-647-11	RES, ADJ, METAL GLAZE 4.7M	
		TRANSFORMER	
T901	⚠.1-439-428-11	TRANSFORMER ASSY, FLYBACK	
		THERMISTOR	
TH901	1-807-938-11	THERMISTOR 500	

****

Ref.No	Part No.	Description	Remark
	*1-630-067-11	LD-17 BOARD (Ref.No 5,000 Series) ************	
	*3-674-372-00	HOLDER (A), LED	
		DIODE	
D901	8-719-941-34	DIODE GL1HD51	
D902	8-719-812-41	DIODE TLR124	

****

Ref.No	Part No.	Description	Remark
		MISCELLANEOUS *************	
	⚠.1-451-310-21	DEFLECTION YOKE (B/W)	
V901	⚠.1-452-482-11	CRT ASSY (M91JYZ60WB) (VF-14 BOARD)	
V901	⚠.1-546-065-11	CATHODE-RAY TUBE, B/W (M01JVV47WB) (FORMER TYPE) (VF-22 BOARD)	
V901	⚠.1-546-085-11	CATHODE-RAY TUBE, B/W (M01KGG007WB) (NEW TYPE) (VF-22 BOARD)	

****

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Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

When indicating parts by reference number, please include the board name.

9-972-870-81

Sony Corporation
Personal Video Group

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Published by Customer Relations and Service Group

CCD-F45/F46/F360

SONY

SERVICE MANUAL

US Model
CCD-F45/F46
Canadian Model
CCD-F45
E Model
CCD-F360

SUPPLEMENT-1

File this supplement with the Service Manual.

Subject : CRT change of type B viewfinder
(CCD-F45 only)

- CRT of type B viewfinder is changed from Serial No.77930 and later(CCD-F45).
  According to this change, some parts mounted on VF-22 board are also changed.

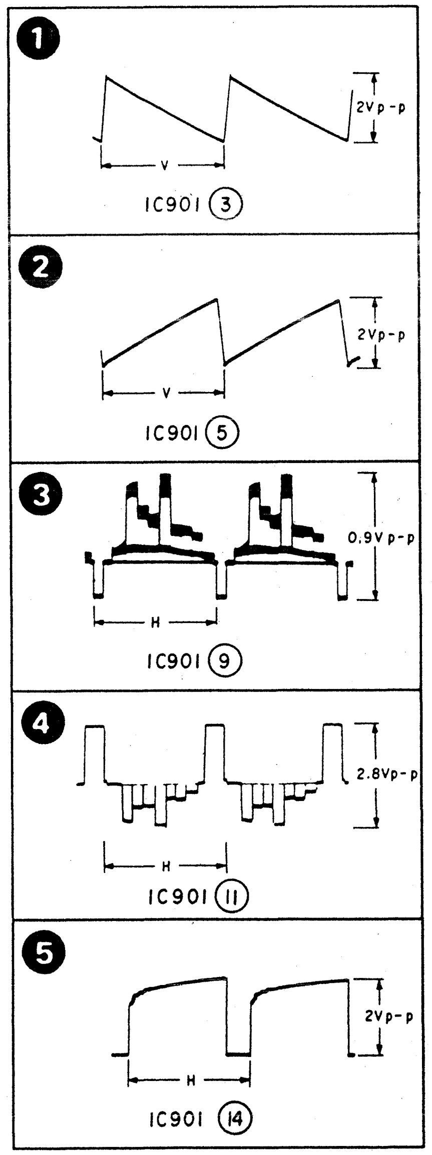
- VF-22 board has already been changed from part number suffix -11 to -12.
  This Supplement-1 also contains it.

VF-22 (ELECTRONIC VIEW FIDER), LD-17 (TALLY LED) PRINTED WIRING BOARDS

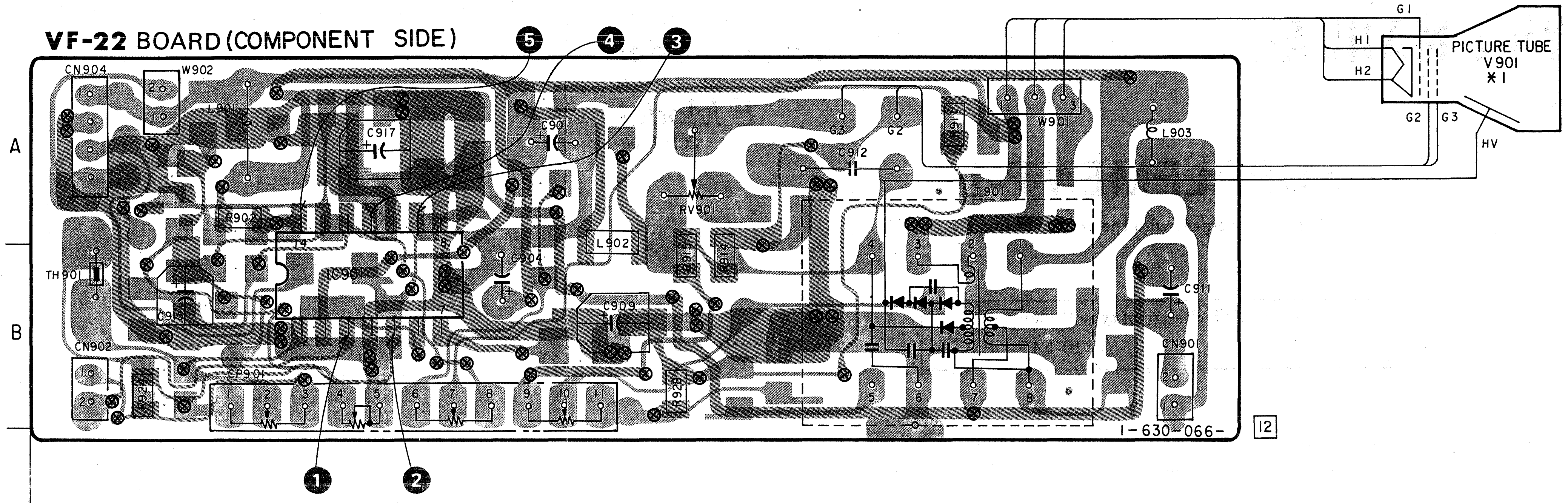
— Ref. No. VF-22 BOARD: 4000 series, LD-17 BOARD: 5000 series —

VF-22	BOARD
D903	D-6
IC901	B-2
Q902	A-1
Q903	E-2
Q904	E-6

VF-22 BOARD



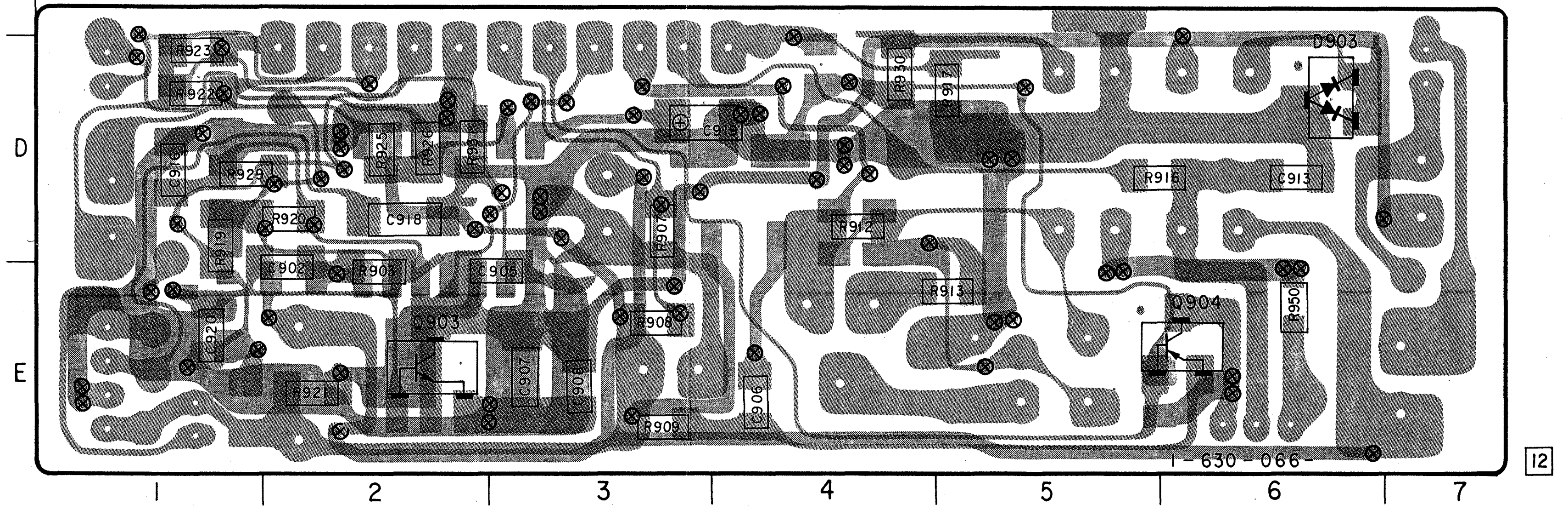
VF-22 BOARD (COMPONENT SIDE)



❺
❹
❸
A
B
CN904
W902
L901
C917
C901
C912
G3
G2
W901
L903
T901
R902
L902
RV901
TH901
IC901
C904
C909
C911
C918
CN902
CP901
CN901
1-630-066-
12
❶
❷
G1
H1
H2
PICTURE TUBE
V901
*1
G2
G3
HV

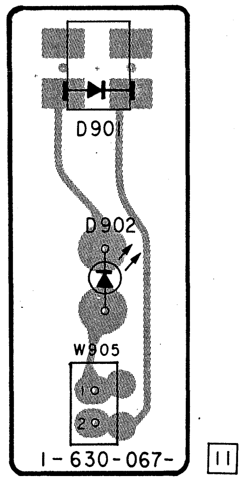
C

VF-22 BOARD (CONDUCTOR SIDE)



D
E
R923
R922
D903
R930
R917
C919
R929
R925
R926
R920
C918
R919
C902
R901
C905
R907
R912
R916
C913
R913
Q904
R950
C920
Q903
R908
C907
C908
C906
R909
1-630-066-
12
1
2
3
4
5
6
7

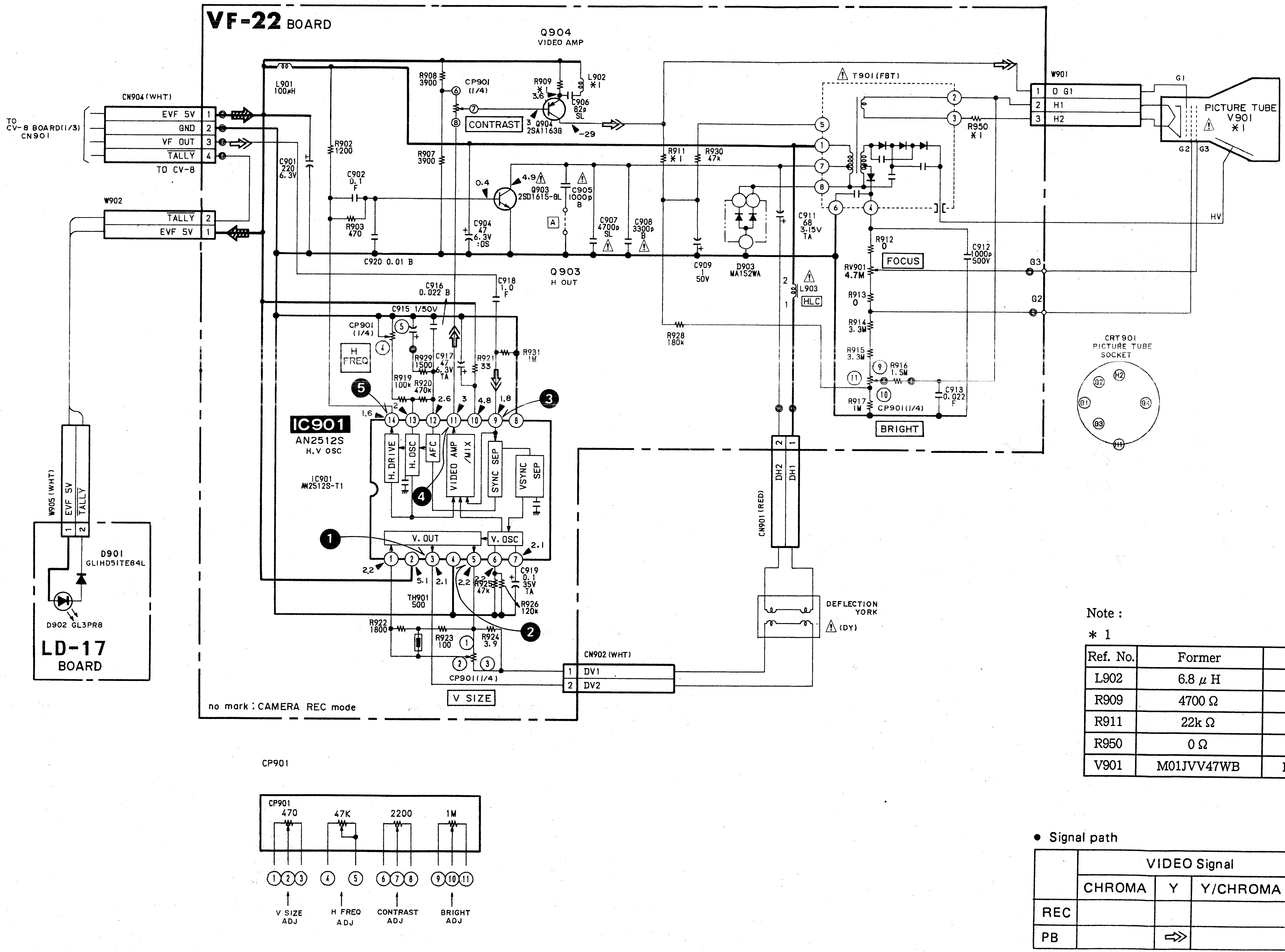
LD-17 BOARD



D901
D902
W905
1-630-067-
11

VF-22 (ELECTRONIC VIEW FIDER), LD-17 (TALLY LED) SCHEMATIC DIAGRAMS

— Ref. No. VF-22 BOARD: 4000 series, LD-17 BOARD: 5000 series —


VF-22 BOARD
Q904
VIDEO AMP
TO CV-8 BOARD(1/3) CN901
CN904 (WHT)
EVF 5V
GND
VF OUT
TALLY
TO CV-8
W902
TALLY
EVF 5V
L901 100μH
C901 220 6.3V
R902 1200
C902 0.1 F
R903 470
C920 0.01 B
R908 3900
R907 3900
CP901 (1/4)
CONTRAST
R909 ✱1 3.6
L902 ✱1
C906 82p SL
Q904 2SA1163B
-29
0.4
4.9
Q903 2SD1615-BL
C905 1000p B
C904 47 6.3V :OS
C907 4700p SL
C908 3300p B
Q903
H OUT
C916 0.022 B
C918 1.0 F
C915 1/50V
H FREQ
R929 1500
C917 47 6.3V TA
R921 33
R931 1M
R919 100k
R920 470k
IC901
AN2512S
H.V OSC
IC901 AN2512S-T1
H. DRIVE
H. OSC
AFC
VIDEO AMP /MIX
SYNC SEP
VSYNC SEP
V. OUT
V. OSC
1.6
2.6
3
4.8
1.8
2.2
5.1
2.1
2.2
2.1
TH901 500
R925 47k
C919 0.1 35V TA
R926 120k
R922 1800
R923 100
R924 3.9
CP901(1/4)
V SIZE
no mark : CAMERA REC mode
CN902 (WHT)
DV1
DV2
R911 ✱1
R930 47k
C909 1 50V
D903 MA152WA
C911 68 3.15V TA
R928 180k
L903
HLC
CN901 (RED)
DH2
DH1
DEFLECTION YORK (DY)
T901 (FBT)
R950 ✱1
R912 0
FOCUS
C912 1000p 500V
RV901 4.7M
R913 0
R914 3.3M
R915 3.3M
R916 1.5M
R917 1M
C913 0.022 F
CP901(1/4)
BRIGHT
W901
0 G1
H1
H2
G1
G2
G3
HV
PICTURE TUBE V901 ✱1
CRT901 PICTURE TUBE SOCKET
W905 (WHT)
EVF 5V
TALLY
D901 GL1HD5ITE84L
D902 GL3PR8
LD-17 BOARD
CP901
470
47K
2200
1M
V SIZE ADJ
H FREQ ADJ
CONTRAST ADJ
BRIGHT ADJ

Note :

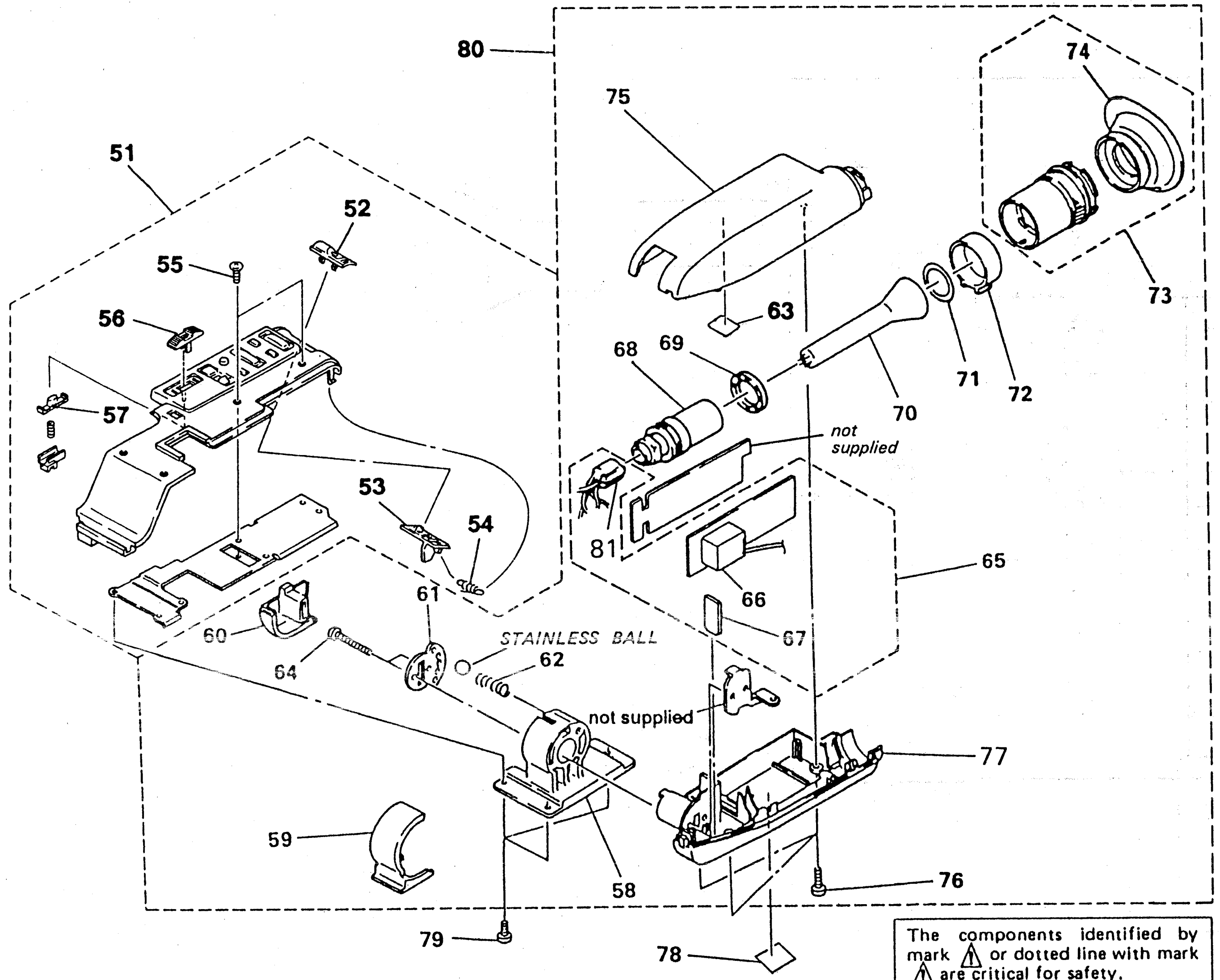
✱ 1

Ref. No.	Former	New
L902	6.8 μ H	22 μ H
R909	4700 Ω	3300 Ω
R911	22k Ω	18k Ω
R950	0 Ω	6.8 Ω
V901	M01JVV47WB	M01KGG007WB

- Signal path

	VIDEO Signal			AUDIO Signal
	CHROMA	Y	Y/CHROMA	
REC				
PB		⇨		

5-3. CABINET (UPPER), EVF ASSEMBLY (TYPE B)



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Ne les remplacer que par une pièce portant le numéro spécifié.

No.	Part No.	Description	Remark
51	X-3733-925-1	CABINET (UPPER) ASSY (CCD-F45/F360)	52-57
	X-3733-945-1	CABINET (UPPER) ASSY (CCD-F46)	52-57
52	3-732-919-01	BUTTON, EJECT (CCD-F45/F360)	
	*3-732-919-11	BUTTON, EJECT (CCD-F46)	
53	3-732-920-01	LOCK, EJECT	
54	3-669-440-00	SPRING, TENSION	
55	3-719-381-01	SCREW (M2X4)	
56	3-718-226-01	BUTTON, POWER	
57	*3-718-257-11	BUTTON, PUSH, POWER	
58	*3-732-944-01	BEARING, EVF	
59	3-732-950-01	BLIND, EVF	
60	3-732-949-01	BLIND, EVF CABINET (LOWER)	
61	3-732-947-01	PLATE, LOCK	
62	3-732-946-01	SPRING, COMPRESSION	
63	3-704-233-01	LABEL, CAUTION, HIGH VOLTAGE	
64	3-732-987-01	SCREW (M2X20), +P	
65	*A-7061-558-A	VF-22 BOARD, COMPLETE (FORMER TYPE)	66, 67, 81
	*A-7061-558-B	VF-22 BOARD, COMPLETE (NEW TYPE)	66, 67, 81
66	⚠.1-439-428-11	TRANSFORMER ASSY, FLYBACK (T901)	
67	*1-630-067-11	LD-17 BOARD	
68	⚠.1-451-310-21	DEFIECTION YOKE (B/W)	
69	3-724-549-01	LOCK, CRT	
70	⚠.1-546-065-11	CATHODE-RAY TUBE, B/W (FORMER TYPE)	
	⚠.1-546-085-11	CATHODE-RAY TUBE, B/W (NEW TYPE)	
71	3-724-570-01	RING, CRT FIXED	
72	X-3724-509-1	HOLDER ASSY, CRT	
73	A-7080-715-A	HOLDER BLOCK ASSY, FINDER	74
74	3-733-922-01	EYE CUP	
75	3-732-948-01	CABINET (UPPER), EVF	
76	3-713-790-31	SCREW (M2X8), TAPPING, P3	
77	X-3732-911-1	CABINET (LOWER) ASSY, EVF	
78	3-703-848-01	LABEL (N), SUB CAUTION	
79	3-732-988-01	SCREW (M2X2.5)	
80	A-7019-151-A	EVF COMPLETE ASSY (FORMER TYPE)	58-78, 81
	A-7019-151-B	EVF COMPLETE ASSY (NEW TYPE)	58-78, 81
81	⚠.1-526-978-21	SOCKET ASSY, CRT (CRT901)	

VF-22 LD-17

Ref.No	Part No.	Description	Remark
	*A-7061-558-A	VF-22 BOARD, COMPLETE (FORMER TYPE) **********************	(Ref.No 4,000 Series)
	*A-7061-558-B	VF-22 BOARD, COMPLETE (NEW TYPE) **********************	(Ref.No 4,000 Series)

CAPACITOR

Ref.No	Part No.	Description	Remark
C901	1-126-369-11	ELECT 220MF 20%	6.3V
C902	1-163-038-00	CERAMIC CHIP 0.1MF	25V
C904	1-127-515-11	ELECT(SOLID) 47MF 20%	6.3V
C905	⚠.1-163-009-11	CERAMIC CHIP 0.001MF 10%	50V
C906	1-163-115-00	CERAMIC CHIP 82PF 5%	50V
C907	⚠.1-162-625-11	CERAMIC CHIP 0.0047MF 5%	50V
C908	⚠.1-163-015-00	CERAMIC CHIP 0.0033MF 10%	50V
C909	1-126-193-11	ELECT CHIP 1MF 20%	50V
C911	1-131-388-00	TANTALUM 68MF 10%	3.15V
C912	1-102-038-00	CERAMIC 0.001MF	500V
C913	1-163-033-00	CERAMIC CHIP 0.022MF	50V
C915	1-126-193-11	ELECT CHIP 1MF 20%	50V
C916	1-163-037-11	CERAMIC CHIP 0.022MF 10%	25V
C917	1-135-166-21	TANTAL. CHIP 47MF 20%	6.3V
C918	1-162-638-11	CERAMIC CHIP 1MF	16V
C919	1-135-070-00	TANTAL. CHIP 0.1MF 10%	35V
C920	1-164-232-11	CERAMIC CHIP 0.01MF 10%	50V

CONNECTOR

Ref.No	Part No.	Description	Remark
CN901	*1-566-195-21	PIN, CONNECTOR (PC BOARD) 2P	
CN902	*1-566-195-11	PIN, CONNECTOR (PC BOARD) 2P	
CN904	*1-566-759-11	PIN, CONNECTOR (PC BOARD) 4P	

CONPOSITION CIRCUIT BLOCK

Ref.No	Part No.	Description	Remark
CP901	1-238-119-11	RES, ADJ	

SOCKET

Ref.No	Part No.	Description	Remark
CRT901	1-526-978-21	SOCKET ASSY, CRT	

DIODE

Ref.No	Part No.	Description	Remark
D903	8-719-400-20	DIODE MA152WA	

IC

Ref.No	Part No.	Description	Remark
IC901	8-759-420-01	IC AN2512S	

COIL

Ref.No	Part No.	Description	Remark
L901	1-408-421-00	INDUCTOR 100UH	
L902	1-410-379-21	INDUCTOR CHIP 6.8UH (FORMER TYPE)	
L902	1-410-385-11	INDUCTOR CHIP 22UH (NEW TYPE)	
L903	⚠.1-459-858-11	COIL, FERRITE (HLC)	

TRANSISTOR

Ref.No	Part No.	Description	Remark
Q902	8-729-402-31	TRANSISTOR 2SD1819A-Q	
Q903	⚠.8-729-106-68	TRANSISTOR 2SD1615A-GP	
Q904	8-729-216-32	TRANSISTOR 2SA1163	

RESISTOR

Ref.No	Part No.	Description	Remark
R902	1-216-051-00	METAL GLAZE 1.2K 5% 1/10W	
R903	1-216-041-00	METAL GLAZE 470 5% 1/10W	
R904	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R906	1-216-051-00	METAL GLAZE 1.2K 5% 1/10W	
R907	1-216-063-00	METAL GLAZE 3.9K 5% 1/10W	
R908	1-216-063-00	METAL GLAZE 3.9K 5% 1/10W	
R909	1-216-065-00	METAL GLAZE 4.7K 5% 1/10W (FORMER TYPE)	
R909	1-216-061-00	METAL GLAZE 18K 5% 1/10W (NEW TYPE)	
R911	1-216-081-00	METAL GLAZE 22K 5% 1/10W (FORMER TYPE)	
R911	1-216-079-00	METAL GLAZE 3.3K 5% 1/10W (NEW TYPE)	
R912	1-216-295-00	METAL GLAZE 0 5% 1/10W	
R913	1-216-295-00	METAL GLAZE 0 5% 1/10W	
R914	1-216-133-00	METAL GLAZE 3.3M 5% 1/10W	
R915	1-216-133-00	METAL GLAZE 3.3M 5% 1/10W	
R916	1-216-125-00	METAL GLAZE 1.5M 5% 1/10W	
R917	1-216-121-00	METAL GLAZE 1M 5% 1/10W	
R919	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
R920	1-216-113-00	METAL GLAZE 470K 5% 1/10W	
R921	1-216-013-00	METAL GLAZE 33 5% 1/10W	
R922	1-216-055-00	METAL GLAZE 1.8K 5% 1/10W	
R923	1-216-025-00	METAL GLAZE 100 5% 1/10W	
R924	1-216-306-11	METAL GLAZE 3.9 5% 1/10W	
R925	1-216-336-11	METAL GLAZE 47K 1% 1/10W	
R926	1-218-163-11	METAL GLAZE 120K 1% 1/10W	
R928	1-216-870-11	METAL GLAZE 180K 1% 1/10W	
R929	1-216-053-00	METAL GLAZE 1.5K 5% 1/10W	
R930	1-216-089-00	METAL GLAZE 47K 5% 1/10W	
R931	1-216-121-00	METAL GLAZE 1M 5% 1/10W	
R950	1-216-295-00	METAL GLAZE 0 5% 1/10W (FORMER TYPE)	
R950	1-216-311-00	METAL GLAZE 6.8 5% 1/10W (NEW TYPE)	

VARIABLE RESISTOR

Ref.No	Part No.	Description	Remark
RV901	1-238-647-11	RES, ADJ, METAL GLAZE 4.7M	

TRANSFORMER

Ref.No	Part No.	Description	Remark
T901	⚠.1-439-428-11	TRANSFORMER ASSY, FLYBACK	

THERMISTOR

Ref.No	Part No.	Description	Remark
TH901	1-807-938-11	THERMISTOR 500	

****

Ref.No	Part No.	Description	Remark
	*1-630-067-11	LD-17 BOARD (Ref.No 5,000 Series) ************	
	*3-674-372-00	HOLDER (A), LED	

DIODE

Ref.No	Part No.	Description	Remark
D901	8-719-941-34	DIODE GL1HD51	
D902	8-719-812-41	DIODE TLR124	

****

MISCELLANEOUS
****

Ref.No	Part No.	Description	Remark
	⚠.1-451-310-21	DEFLECTION YOKE (B/W)	
V901	⚠.1-452-482-11	CRT ASSY (M91JYZ60WB) (VF-14 BOARD)	
V901	⚠.1-546-065-11	CATHODE-RAY TUBE, B/W (M01JVV47WB) (FORMER TYPE) (VF-22 BOARD)	
V901	⚠.1-546-085-11	CATHODE-RAY TUBE, B/W (M01KGG007WB) (NEW TYPE) (VF-22 BOARD)	

****

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

When indicating parts by reference number, please include the board name.

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Personal Video Group

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CCD-F45/F46/F360

SONY

SERVICE MANUAL

US Model
CCD-F45/F46
Canadian Model
CCD-F45/F46
E Model
CCD-F360

CORRECTION-1

File this correction with the service manual.

Page. 228 7-2-31. Auto-Focus Adjustment

3. Adjustment in Siemers star (CV-8 board)
☛ : Corrected portion

INCORRECT	CORRECT
4) Read the AF jig indication, and call the data D, and then convert it to the decimal number D'. Then obtain FHSM' by the following formula: FHSM'=D'/2.5 (FHSM' shall be within 16 to 55)	4) Read the AF jig indication, and call the data FHSM, and then convert it to the decimal number FHSM'. ☛ (FHSM' shall be within 16 to 55)
5) Select adjustment address 37 and input adjustment data FD with the adjustment remote controller (the auto-focus will be set to the FA side).	5) Select adjustment address 37 and input adjustment data FD with the adjustment remote controller (the auto-focus will be set to the FA side).
6) Read the AF jig indication, and call the data D, and then convert it to the decimal number D'. Then obtain FASM' by the following formula: FASM'=D'/1.6 (FASM' shall be within 78 to 104)	6) Read the AF jig indication, and call the data FASM, and then convert it to the decimal number FASM'. ☛ (FASM' shall be within 78 to 104)

Page. 225 7-2-26 Auto White Balance Adjustment

☜ : Corrected portion

<table>
<tr><th>INCORRECT</th><th>CORRECT</th></tr>
<tr>
<td>
1. Preset adjustment (CV-8 Board)
Adjustment method:
6) Select adjustment address 89 (AWB MODE) and set the adjustment data to E0. Wait at least five seconds.

2. Auto white balance adjustment (CV-8 Board)
Adjustment method:
1) Select adjustment address 89 (AWB MODE) with the adjustment remote commander and enter adjustment data of 10.

15) Select adjustment address 89 and enter adjustment data 00.
16) Select adjustment address 89 and enter adjustment data F0.
17) Change the adjustment data of adjustment addresses 01 and 02 with the adjustment remote commander to move the white luminance point and black luminance point.
(Move the white luminance point to the origin point when using the vectorscope.)
18) Select adjustment address 89 and enter adjustment data of 00.
19) Change the adjustment address to store the adjustment data in the memory.
(Example)
When the adjustment data obtained in Step 2) has the following values.
<table>
<tr><th>Adjustment address</th><th>Adjustment data</th><th></th></tr>
<tr><td>01</td><td>2A</td><td>→ Enter into adjustment address 80</td></tr>
<tr><td>02</td><td>53</td><td>→ Enter into adjustment address 81</td></tr>
</table>
D_1=2A and D_2=53 when there is conversion to decimal using Table 7-5.
$D_1'=42$
$D_2'=83$

Thus,
$D_{77}'=(83 \times 1.9)-43.2=114.5$

Rounding off the decimal portion and converting to hexadecimal by Table 7-5 results in,
D_{77}=72 → Entered into adjustment address 77
</td>
<td>
1. Preset adjustment (CV-8 Board)
Adjustment method:
6) Select adjustment address 89 (AWB MODE) and set the adjustment data to E0. ☜

2. Auto white balance adjustment (CV-8 Board)
Adjustment method:
1) Select adjustment address 89 (AWB MODE) with the adjustment remote commander and enter adjustment data of 10. And cover the lens with the filter C14. ☜

15) Select adjustment address 89 and enter adjustment data F0. ☜
16) Change the adjustment data of adjustment addresses 01 and 02 with the adjustment remote commander to move the white luminance point and black luminance point.
(Move the white luminance point to the origin point when using the vectorscope.)
17) Select adjustment address 89 and enter adjustment data of 00.
18) Remove the filter C14. ☜
19) Change the adjustment address to store the adjustment data in the memory.
(Example)
When the adjustment data obtained in Step 2) has the following values.
<table>
<tr><th>Adjustment address</th><th>Adjustment data</th><th></th></tr>
<tr><td>01</td><td>2A</td><td>☜
→ Entered into adjustment address 78</td></tr>
<tr><td>02</td><td>53</td><td></td></tr>
</table>
D_1=2A and D_2=53 when there is conversion to decimal using Table 7-5.
$D_1'=42$
$D_2'=83$

Thus,
$D_{80}'=42+1=43$ ☜
$D_{81}'=83+3=86$ ☜
$D_{77}'=(83 \times 1.9)-43.2=114.5$

Rounding off the decimal portion and converting to hexadecimal by Table 7-5 results in,
D_{80}=2B → Entered into adjustment address 80. ☜
D_{81}=56 → Entered into adjustment address 81. ☜
D_{77}=72 → Entered into adjustment address 77.
</td>
</tr>
</table>

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Personal Video Group

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CCD-F45/F46

SONY
SERVICE MANUAL

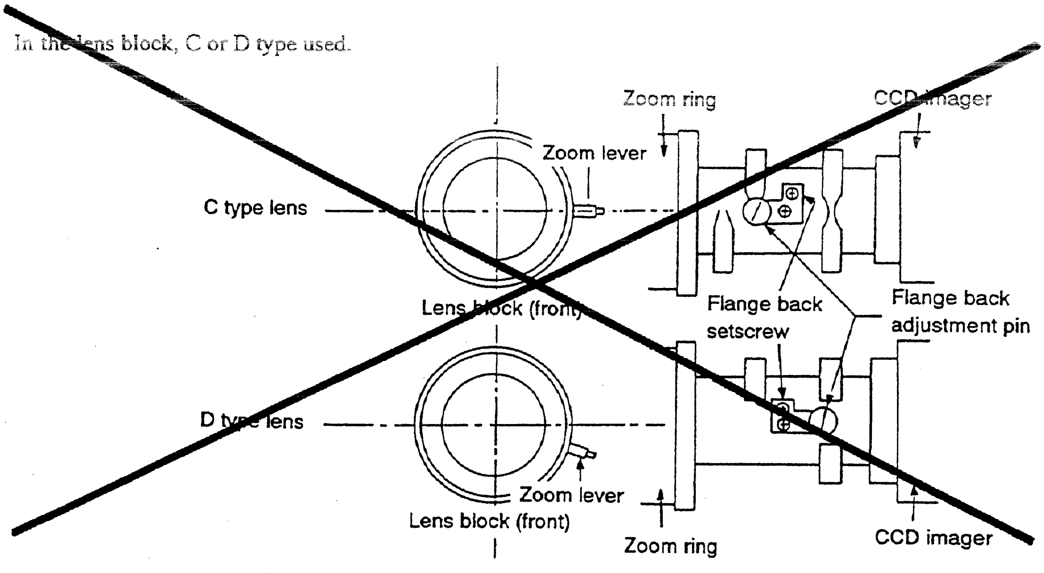
US Model
CCD-F45/F46
Canadian Model
CCD-F46

SUPPLEMENT-1

Subject : Parts List of Lens Block addition

There is only one type (C type) in lens block of CCD-F45/F46.
Therefore, delete the following portion of CAUTION on Service manual page 5.

~~2. In the lens block, C or D type used.~~


Zoom ring
CCD imager
Zoom lever
C type lens
Lens block (front)
Flange back setscrew
Flange back adjustment pin
D type lens
Zoom lever
Lens block (front)
Zoom ring
CCD imager

EXPLODED VIEW

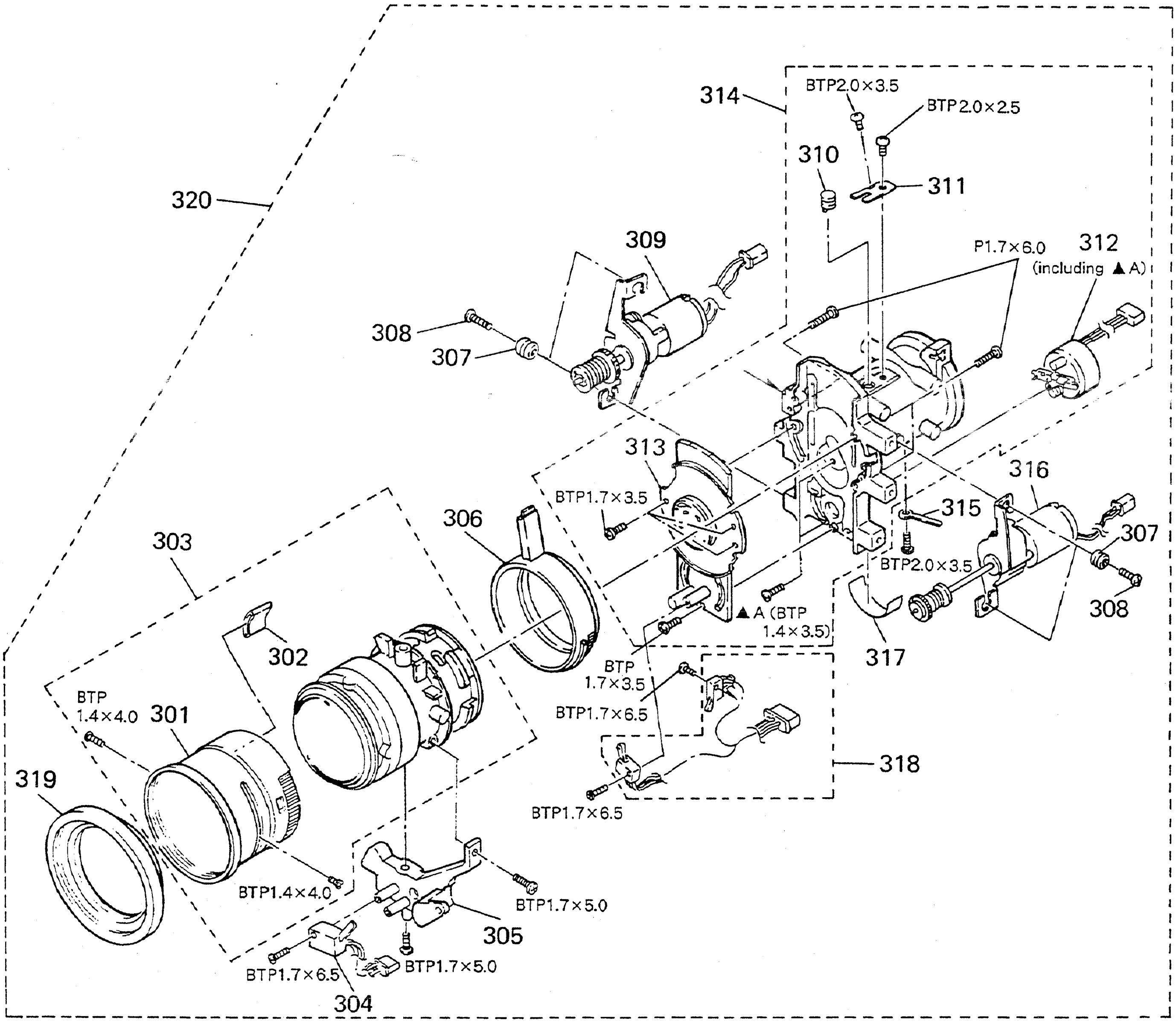
NOTE:

- The mechanical parts with no reference number in the exploded views are not supplied.
- The construction parts of an assembled part are indicated with a collation number in the remark column.
- Items marked "★" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- -XX, -X mean standardized parts, so they may have some differences from the original one.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifé.

LENS BLOCK


314
BTP2.0×3.5
BTP2.0×2.5
310
311
320
309
P1.7×6.0
312
(including ▲A)
308
307
313
BTP1.7×3.5
316
306
315
307
303
BTP2.0×3.5
308
▲A (BTP 1.4×3.5)
317
302
BTP 1.7×3.5
BTP1.7×6.5
BTP 1.4×4.0
301
318
319
BTP1.7×6.5
BTP1.4×4.0
BTP1.7×5.0
305
BTP1.7×6.5
BTP1.7×5.0
304

No.	Part No.	Description	Remark	No.	Part No.	Description	Remark
301	3-707-812-01	RING (F)		311	3-707-798-01	CLAMP, PIN	
302	3-707-801-01	RUBBER, STOPPER (F)		312	3-707-810-01	METER, IRIS	
303	3-707-808-01	TUBE ASSY	301, 302	313	3-707-809-01	FRAME ASSY, LENS	
304	3-707-805-01	SWITCH ASSY, AF		314	3-707-807-01	TUBE ASSY, REAR	310-313
305	3-707-806-01	BRACKET		315	3-707-799-01	PLATE, LUG	
306	3-707-811-01	RING ASSY, ZOOM		316	3-707-803-01	MOTOR ASSY, AF GEAR	
307	3-707-795-01	RUBBER, VIBRATION PROOF		317	3-707-800-01	TAPE	
308	3-707-796-01	SCREW, FITTING (M)		318	3-707-804-01	PZ SWITCH ASSY	
309	3-707-802-01	MOTOR ASSY, PZ GEAR		319	3-707-568-01	ADAPTOR, LENS HOOD	
310	3-707-797-01	PIN		320	1-547-380-11	LENS, ZOOM (VCL-8508XB)	301-319

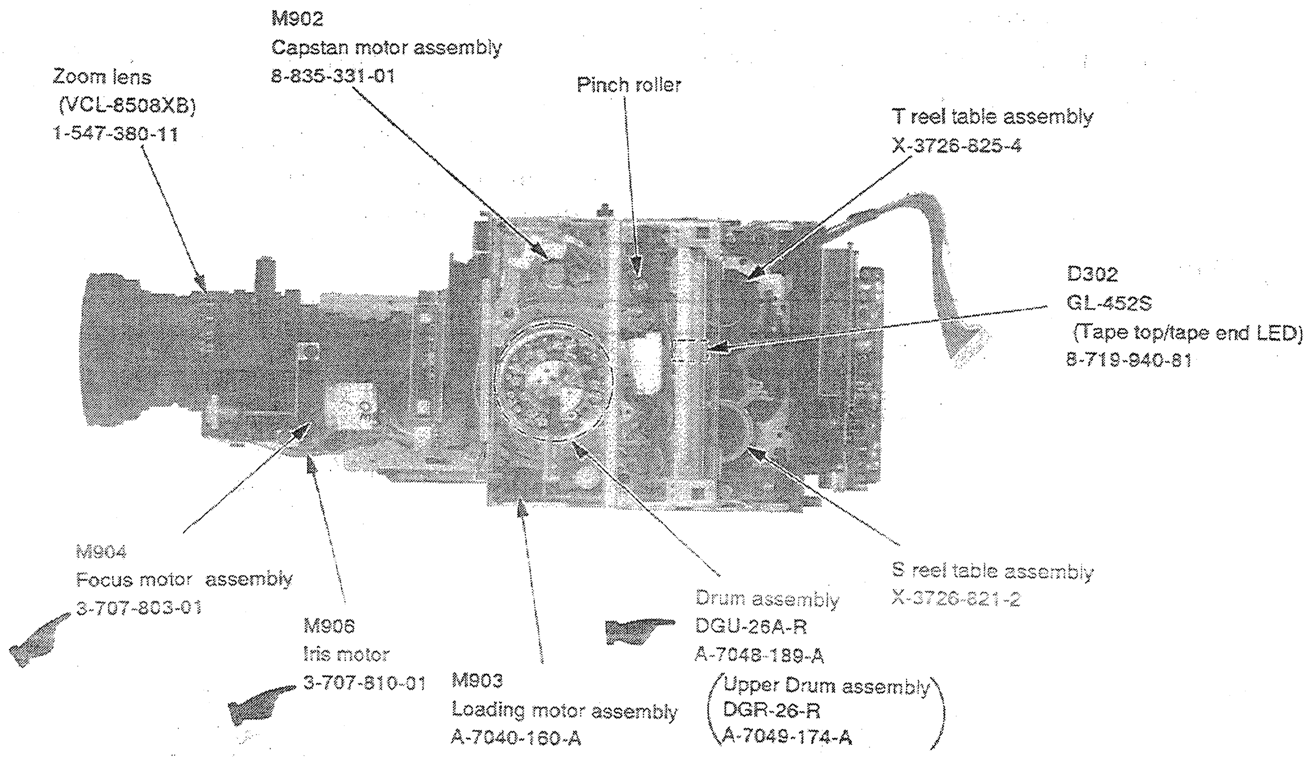
CORRECTION

☛ : Corrected portion

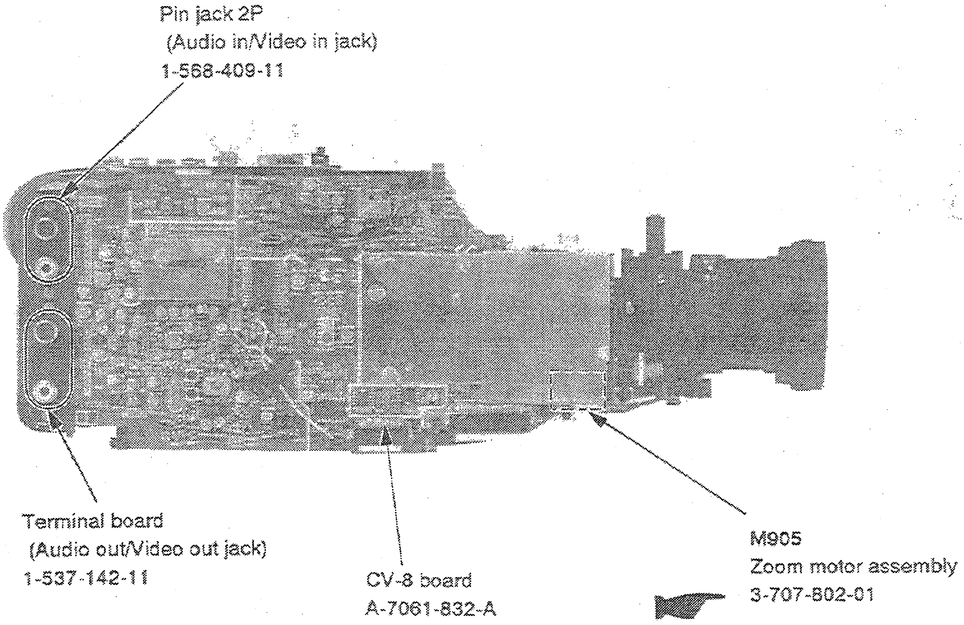
Page. 32

2-12. INTERNAL VIEW

– Right Side –


M902
Capstan motor assembly
8-835-331-01
Zoom lens
(VCL-8508XB)
1-547-380-11
Pinch roller
T reel table assembly
X-3726-825-4
D302
GL-452S
(Tape top/tape end LED)
8-719-940-81
M904
Focus motor assembly
3-707-803-01
M906
Iris motor
3-707-810-01
M903
Loading motor assembly
A-7040-160-A
Drum assembly
DGU-26A-R
A-7048-189-A
(Upper Drum assembly
DGR-26-R
A-7049-174-A)
S reel table assembly
X-3726-821-2

– Left Side –


Pin jack 2P
(Audio in/Video in jack)
1-568-409-11
Terminal board
(Audio out/Video out jack)
1-537-142-11
CV-8 board
A-7061-832-A
M905
Zoom motor assembly
3-707-802-01

Page. 94,107,112

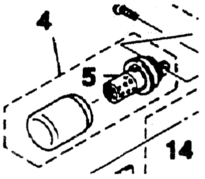
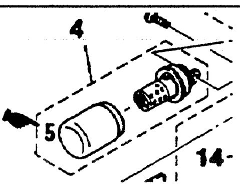
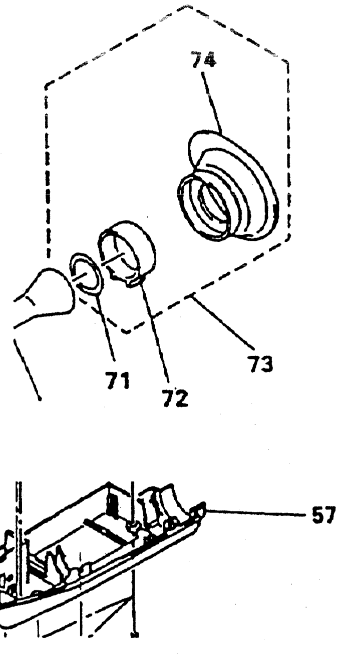
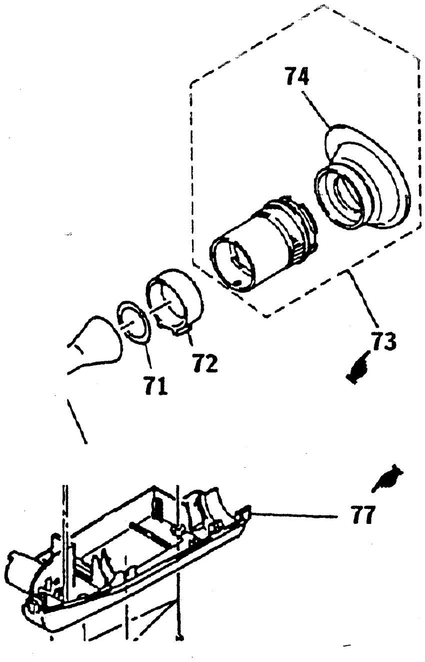
CV-8 BOARD printed wiring board location B-2

R205 deleted

Schematic Diagrams Title

Page	INCORRECT	CORRECT
135	CO-2 (HEAD AMP, AUDIO/SERVO, SYSTEM CONTROL), CC-26 (TFG/SFG AMP), KS-6 (CAPSTAN MOTOR DRIVE JUNCTION), FP-89 (TAPE END SENSOR),	CO-2 (HEAD AMP, AUDIO) SCHEMATIC DIAGRAMS
143	CO-2 (HEAD AMP, AUDIO/SERVO, SYSTEM CONTROL) SCHEMATIC DIAGRAMS	CO-2 (SERVO/SYSTEM CONTROL), CC-26 (TFG/SFG AMP), KS-6 (CAPSTAN MOTOR DRIVE JUNCTION), FP-89 (TAPE END SENSOR), FP-90 (TAPE TOP SENSOR) SCHEMATIC DIAGRAMS

Exploded Views

Page	INCORRECT	CORRECT
172		
174	 No. Part No. Description Remark 77 7-671-156-01 BALL,STAINLESS	 No. Part No. Description Remark 77 X-3732-911-1 CABINET (LOWER) ASSY,EVF
176	157 A-7048-219-A DRUM ASSY (DGU-41A-R) 158,159 159 A-7049-203-A DRUM ASSY,UPPER (DGU-41R)	157 A-7048-189-A DRUM ASSY (DGU-26A-R) 158,159 159 A-7049-174-A DRUM ASSY,UPPER, ROTARY(DGU-26-R)

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Personal Video Group

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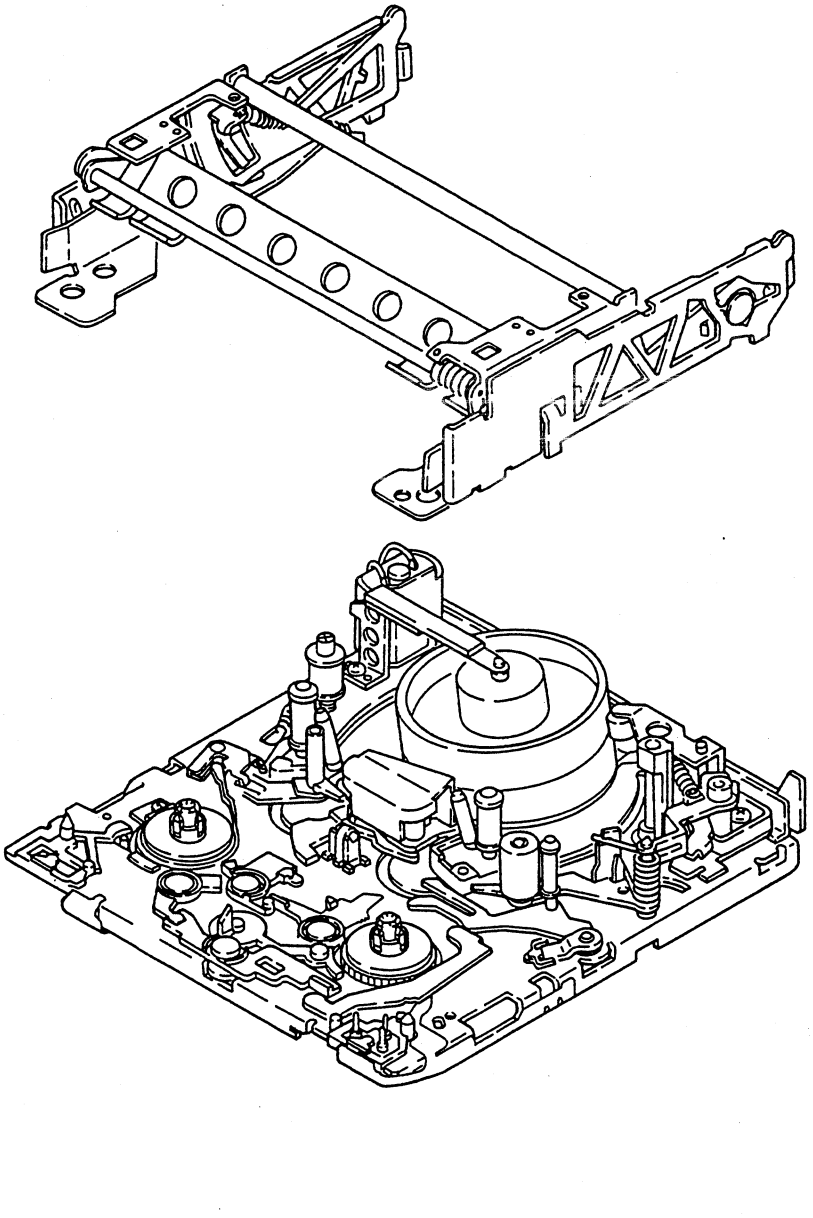
8mm Video MECHANICAL ADJUSTMENT MANUAL II

U MECHANISM

Video 8

Please use in conjunction with the SERVICE MANUAL.



8 MECHANISM DECK

SONY®

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1-1-3. Eject Operation 3
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1-2-1. Name of Each Part (external) 4
1-2-2. Connections 4
1-2-3. Handling 4

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1. PREPARATIONS FOR MECHANICAL BLOCK CHECK, ADJUSTMENT AND REPLACEMENT

Note: For removal of the cabinet, the boards, the cassette compartment, etc., refer to the service guides.

1-1. OPERATION WITHOUT CASSETTE COMPARTMENT ASSEMBLY AND TAPE

Note: The unit will not work if exposed to a strong light.

1-1-1. How to Trigger the Loading Operation (See Fig. 1-1.)

1) Supply power to the unit after removing the cabinet, the camera block, the cassette compartment assembly, etc., as indicated in the service guides. (This will enable operation of the mechanical deck.)
2) Cover the LED assembly with an opaque cap, etc. ❶.
3) Attach a piece of tape to the RECOG switch ❷ so that the pin is held down.
4) Push the EJECT lever ❸ in the direction of the arrow Ⓐ.

1-1-2. Setting the Playback Mode (See Fig. 1-1.)

1) Follow the procedures in section 1-1-1. above.
2) Put the rubber band ❹ around the S and T reels.
3) Press the PLAY switch of unit, then push the tension regulator arm assembly ❺ in the direction of the arrow Ⓑ when the T reel starts to rotate (the tension regulator band will be released, and the S reel will start rotating).
4) To stop operation, press the STOP switch.

1-1-3. Eject Operation (See Fig. 1-1.)

1) To eject, turn the EJECT switch on.

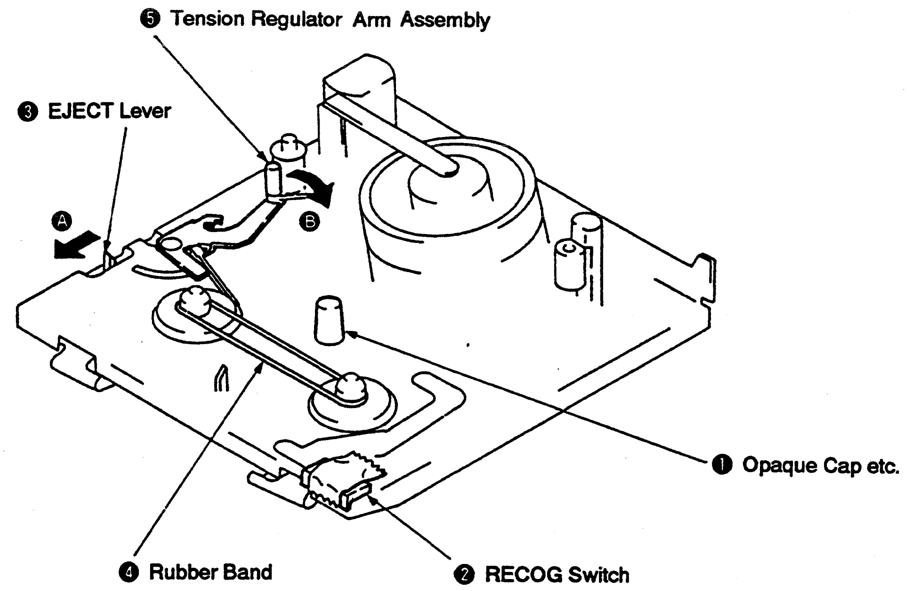


Fig. 1-1.

1-2. THE MODE SELECTOR

1-2-1. Name of Each Part (external) (See Fig. 1-2.)

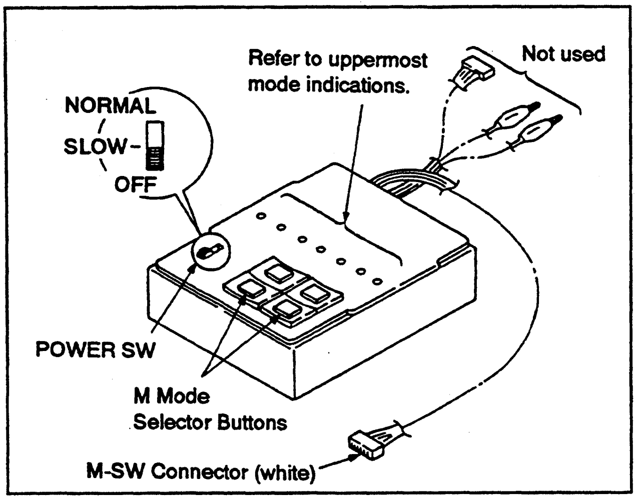

Refer to uppermost mode indications.
Not used
NORMAL
SLOW
OFF
POWER SW
M Mode Selector Buttons
M-SW Connector (white)

Fig. 1-2.

1-2-2. Connections (See Fig. 1-3.)

1) Mount the MODE SELECTOR III panel (Ref. No. J-9) ❶ onto the mode selector.
2) Attach the conversion connector (Ref. No. J-8) ❸ of MODE SELECTOR III to the 6-pin connector (white) ❷ of the mode selector M-SW.
3) Remove the FP-89 flexible board ❺ from the flexible connector ❹.
4) Attach the FP-89 flexible board ❺ to the flexible connector ❻ of the MODE SELECTOR III conversion connector ❸, then attach the 2-pin connector (white) ❽ of the loading motor to the 2-pin connector (white) ❼.

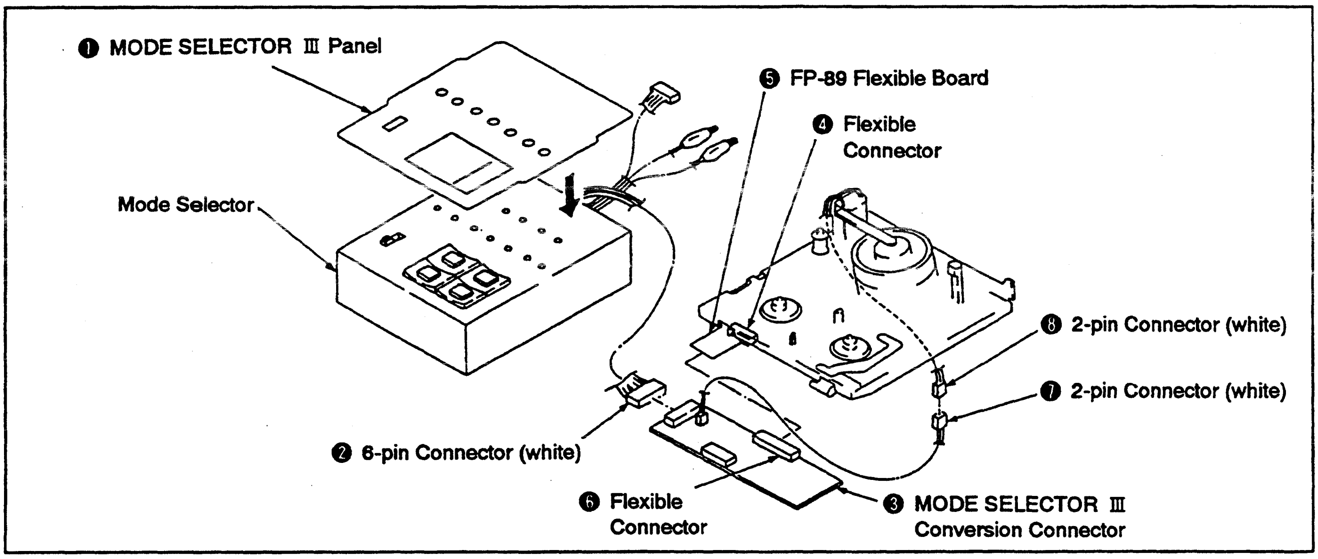

❶ MODE SELECTOR Ⅲ Panel
Mode Selector
❷ 6-pin Connector (white)
❺ FP-89 Flexible Board
❹ Flexible Connector
❽ 2-pin Connector (white)
❼ 2-pin Connector (white)
❻ Flexible Connector
❸ MODE SELECTOR Ⅲ Conversion Connector

Fig. 1-3.

1-2-3. Handling (See Figs. 1-2. and 1-4.)

- Use only the M mode selector buttons.
- Refer to mode indications on the uppermost part of the MODE SELECTOR III panel.
- If the right M mode selector button is kept pressed, the lit indication will change in the order of EJECT → (IA) → ULD → (IB) → STOP → (IC) → FWD.
- To change modes in the reverse direction (from FWD to EJECT), press the left selector button.

Note: For this U mechanism, the uppermost indicators on the MODE SELECTOR III panel are used. The IA, IB and IC indications light up during mode changes.

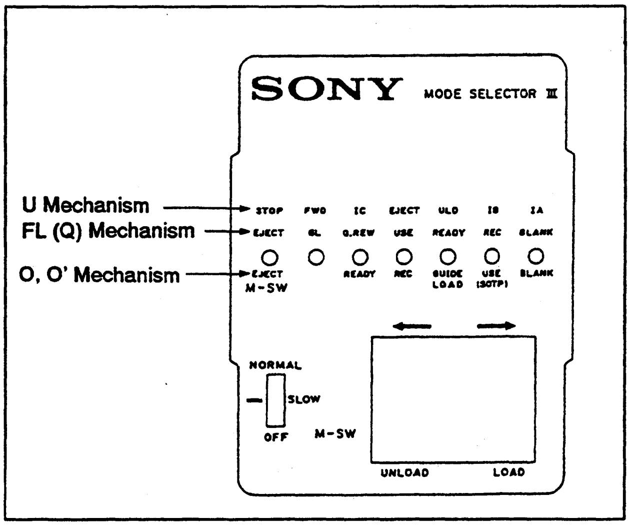

SONY MODE SELECTOR Ⅲ
U Mechanism
FL (Q) Mechanism
O, O' Mechanism
STOP
FWD
IC
EJECT
ULD
IB
IA
EJECT
SL
Q.REW
USE
READY
REC
BLANK
EJECT
M-SW
READY
REC
GUIDE LOAD
USE (30TP)
BLANK
NORMAL
SLOW
OFF
M-SW
UNLOAD
LOAD

Fig. 1-4.

2. PERIODICAL CHECK AND MAINTENANCE (See Fig. 2-1.)

The following periodical check and maintenance procedures are necessary to ensure proper operation and to protect the tapes as well as the unit, and the following maintenance procedures must be always carried out after repairing regardless of how long the unit has been used.

2-1. ROTARY DRUM ASSEMBLY CLEANING

1) While pressing a piece of chamois leather (Ref. No. J-2) moistened in cleaning fluid (Ref. No. J-1) lightly against the rotary drum, turn the rotary upper drum slowly counter-clockwise with your fingers.

Note: Do not drive the drum with the motor, and do not turn it clockwise.
Do not move the chamois leather vertically against the head tip; this can damage the head tip. Strictly follow the cleaning instructions above.

2-2. TAPE PATH CLEANING

1) Set the cassette compartment assembly to the eject state, or remove it. Then clean the tape path (guides No. 1 to 7, capstan shaft, pinch rollers) with a piece of chamois leather moistened in cleaning fluid (See Fig. 2-1).

2-3. DRIVE SYSTEM CLEANING

1) Clean the drive system (timing belt, reel table surface) with a piece of cloth moistened in cleaning fluid.

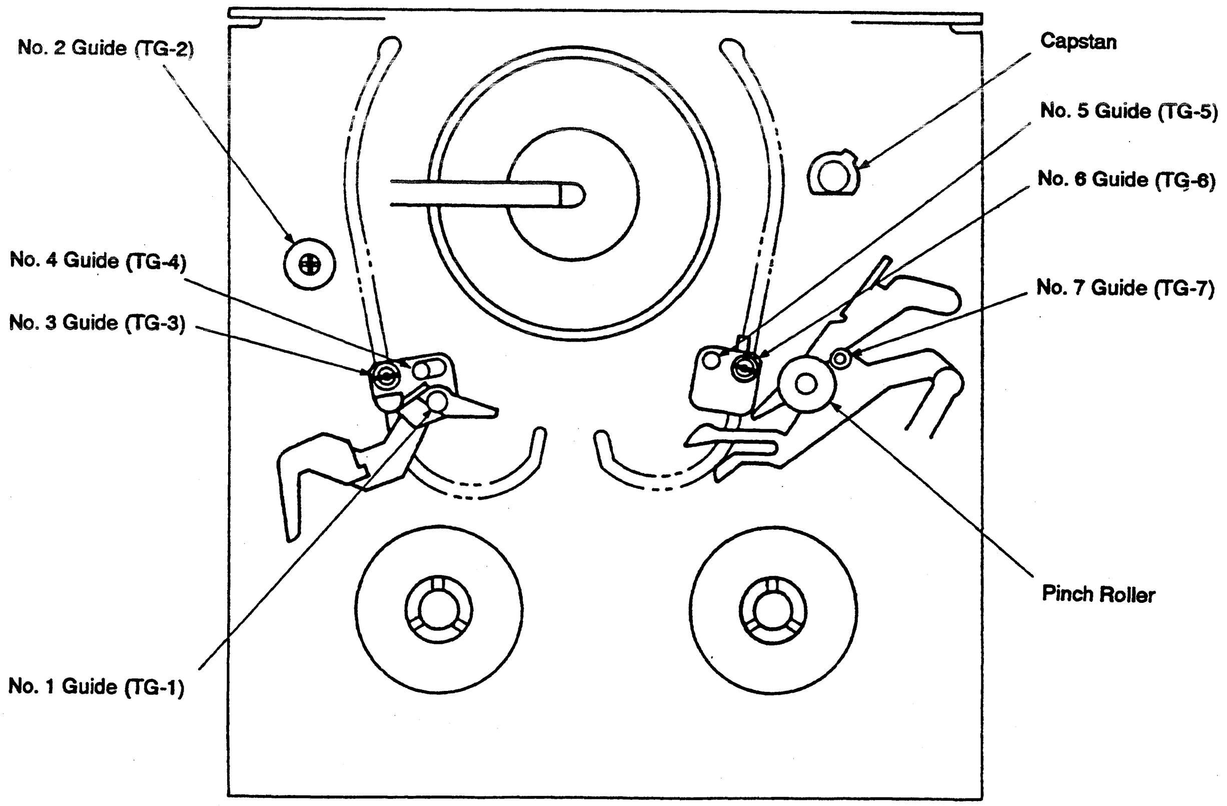


Fig. 2-1.

2-4. PERIODICAL CHECK ITEMS

○Cleaning ◎Lubrication ☆Check

Maintenance and Check Item		Operation time (H)										Remarks
		500	1,000	1,500	2,000	2,500	3,000	3,500	4,000	4,500	5,000	
Cleaning and Demagnetizing	Tape path surfaces Cleaning	○	○	○	○	○	○	○	○	○	○	Do not oil.
	Rotary drum assembly cleaning and demagnetizing	○	○	○	○	○	○	○	○	○	○	Do not oil.
Drive System	Relay belt (short)	–	☆	–	☆	–	☆	–	☆	–	☆	3-728-866-01
	Relay belt (long)	–	☆	–	☆	–	☆	–	☆	–	☆	3-728-865-01
	Capstan shaft	–	◎	–	◎	–	◎	–	◎	–	◎	Take care that no oil gets on tape path surfaces.
	Idler pulley axle	–	◎	–	◎	–	◎	–	◎	–	◎	
	Loading motor	–	☆	–	☆	–	☆	–	☆	–	☆	1-541-612-11
Performance Check	Abnormal noise	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	
	Back tension measurement	–	☆	–	☆	–	☆	–	☆	–	☆	
	Brake system	–	☆	–	☆	–	☆	–	☆	–	☆	
	FWD, RVS torque measurement	–	☆	–	☆	–	☆	–	☆	–	☆	

Notes: When overhauling the unit, perform parts replacement referring to the table above.

Regarding Oil:

- Always use the specified oil (using oil of different viscosity, etc. can cause troubles of several kinds).
  Specified oil: Part No. 7-661-018-01
  (Mitsubishi Diamond Oil Hydrofluid EP56)
- Be sure that no dirt is mixed in the oil to be used on axle bearings. Use of dirty oil can result in bearing wear and burning.
- By "one drop of oil" is meant the quantity of oil adhering to the end of a a 2mm-diameter rod as shown in Fig. 2-2.

On grease:

- Use the specified grease.
  Grease: Part No. 7-662-010-08
  (Sony grease SGL-701)

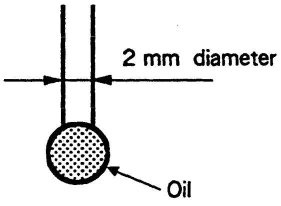


Fig. 2-2.

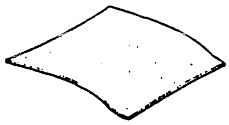
2-5. SERVICING TOOLS

Ref. No.	Name	Part Code	Marking	Application, etc.
J-1	Cleaning fluid	Y-2031-001-0	–	
J-2	Chamois cloth	2-034-697-00	–	
J-3	Head demagnetizer	Commercially available	–	
J-4	Dental mirror Spare mirror	J-6080-029-A J-6080-030-1	SL-5052	Tape path
J-5	Alignment tape NTSC (WR5-1N) PAL (WR5-1C)	8-967-995-01 8-967-995-06		Tape path
J-6	FWD/RVS takeup torque cassette	J-6080-824-A	GD-2086	
J-7	Rotary drum jig	(Attached to the maintenance rotary upper drum)		
J-8	Mode selector III conversion connector	J-6082-021-A		General
J-9	Mode selector III panel	J-6082-023-A		General
J-10	Mode selector	J-6080-825-A		General
J-11	Hexagonal wrench detection (0.89 mm) or L wrench (0.89 mm)	7-700-766-01 7-700-736-06		Tape path
J-12	Sony grease (SGL-701)	7-662-010-08		

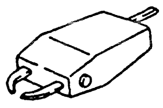
Other devices: Oscilloscope
Analog tester (20 kΩ)

J-1

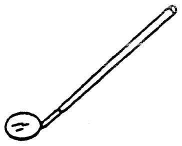
J-2



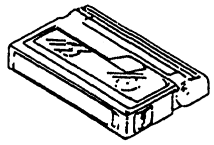
J-3



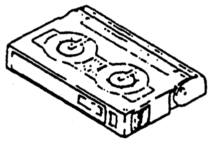
J-4



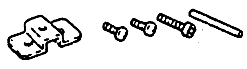
J-5



J-6

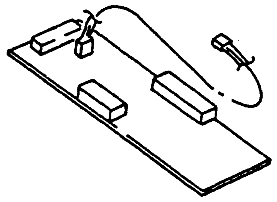


J-7

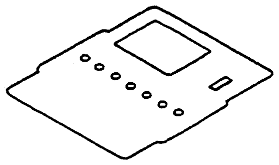


(Attached to the maintenance rotary upper drum)

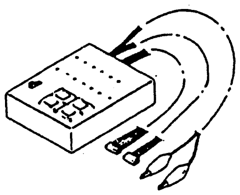
J-8



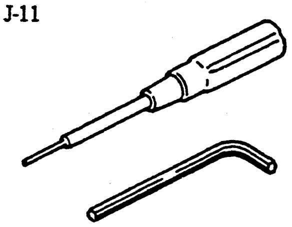
J-9



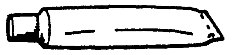
J-10



J-11



J-12



3. MECHANICAL BLOCK CHECK, ADJUSTMENT AND REPLACEMENT

Notes:
- Use the mode selector (Ref. No. J-10) for procedures in this chapter.
- Modes within a frame ☐ are those set by pressing the buttons of the mode selector.

3-1. HC ROLLER ASSEMBLY

1. Removal (See Fig. 3-1.)

1) Remove the screw ❶, then remove the HC roller assembly ❷.

2. Installation (See Fig. 3-1.)

1) Align the two dowels ❸ attached to the HC roller assembly ❷ with the two holes ❹ in the mechanism chassis.
2) Secure the HC roller assembly ❷ with the screw ❶.

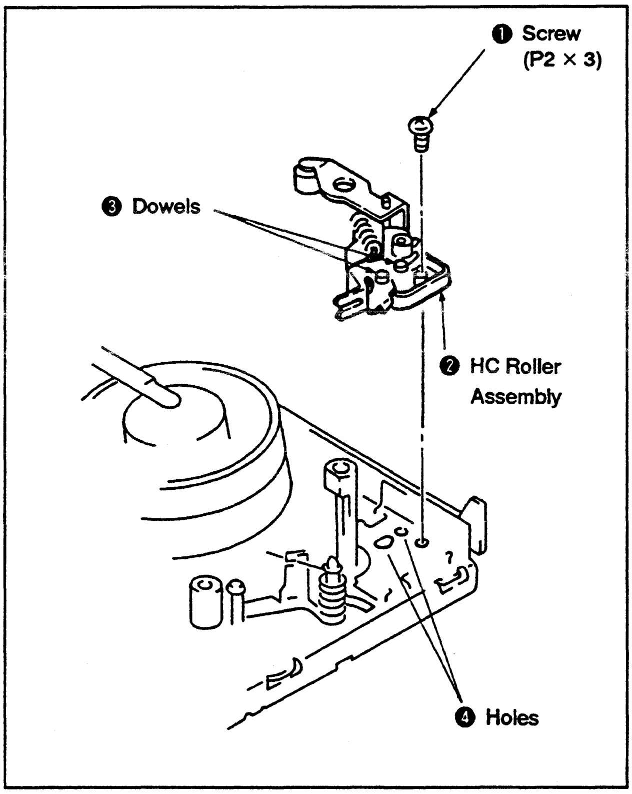

❶ Screw (P2 × 3)
❸ Dowels
❷ HC Roller Assembly
❹ Holes

Fig. 3-1.

3-2. GUIDE GUARD ASSEMBLY

1. Removal (See Fig. 3-2.)

Remove the screw ❶, then remove the guide guard assembly ❷.

2. Installation (See Fig. 3-2.)

1) Align the dowel ❸ attached to the guide guard assembly ❷ with the hole ❹.
2) Secure the guide guard assembly ❷ with the screw ❶.

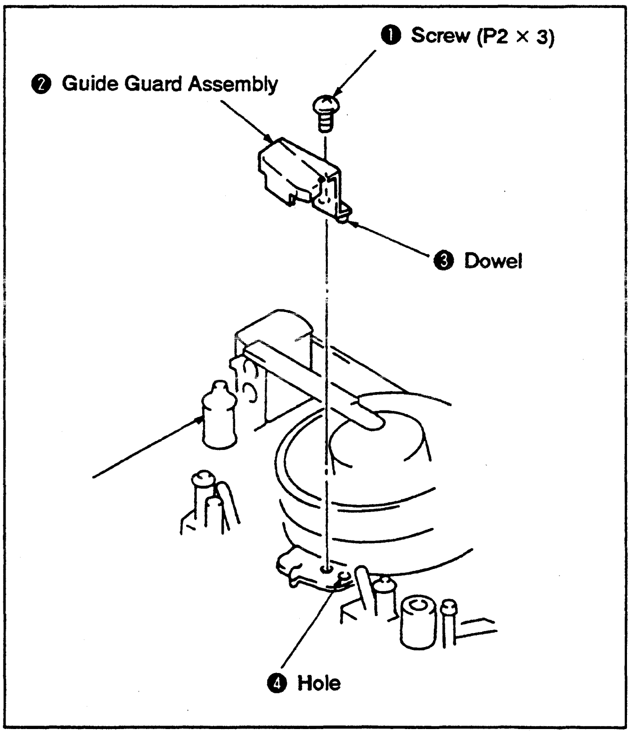

❶ Screw (P2 × 3)
❷ Guide Guard Assembly
❸ Dowel
❹ Hole

Fig. 3-2.

3-3. DC MOTOR (CAPSTAN MOTOR) ASSEMBLY

1. Removal (See Fig. 3-3.)

1) Set the ULD mode.
2) Turn the stopper ❶ in the direction of the arrow 🅐 as far as it will go.
3) Remove the two screws ❷, then remove the DC motor ❸.

2. Installation (See Fig. 3-3.)

1) Align the two screwed dowels ❹ with the two holes ❺, then engage the toothed part ❻ with the connecting gear ❼.
2) Secure the DC motor assembly ❸ with the two screws ❷.
3) Turn the stopper ❶ in the direction of the arrow 🅑 as far as it will go.

Note:
- When engaging the gears, take care not to damage their teeth.
- Do not leave any clearance between the DC motor ❸ and the chassis.
- Do not touch the capstan motor axle*, the oil seal* and the rotor*.

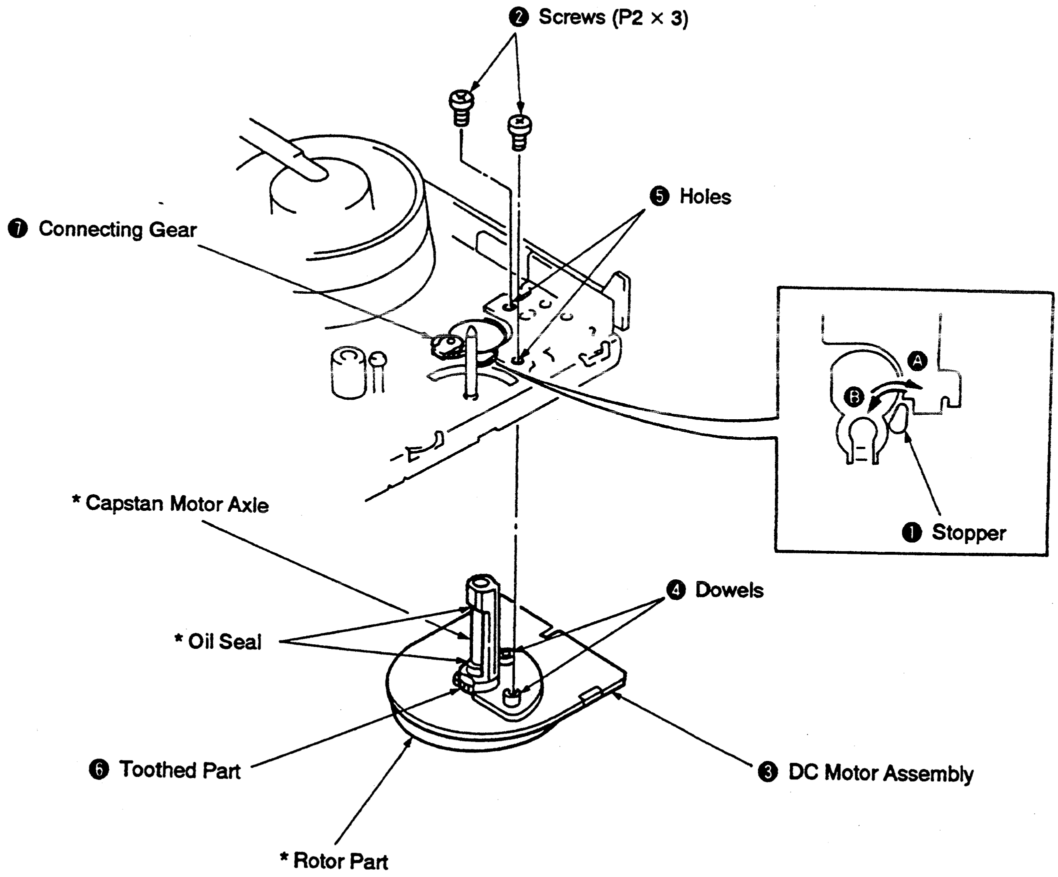

❷ Screws (P2 × 3)
❺ Holes
❼ Connecting Gear
🅐
🅑
❶ Stopper
* Capstan Motor Axle
❹ Dowels
* Oil Seal
❻ Toothed Part
❸ DC Motor Assembly
* Rotor Part

Fig. 3-3.

3-4. S BRAKE, T BRAKE

1. Removal (See Fig. 3-4.)

1) Remove the torsion coil spring (ST) ❶.
2) Remove the axle holding pin ❷, then remove the T brake ❸.
3) Remove the axle holding pin ❹, then remove the S brake ❺.

2. Installation (See Fig. 3-4.)

1) While fitting the toothed part ❻ into the notch ❼, mount the S brake ❺.
2) Insert the axle holding pin ❹.
3) Insert the axle ❽ to the S reel side of the brake release arm ❾ so that the Ⓐ part comes closer to the drum than part Ⓑ, and mount the T brake ❸.
4) Insert the axle holding pin ❷.
5) Insert the torsion coil spring (ST) ❶ below the claw ⓫ of the axle ❿, then hook it to two claws ⓬.

Note: Confirm that the claws of axle holding pins ❷ and ❹ are not broken before assembling.

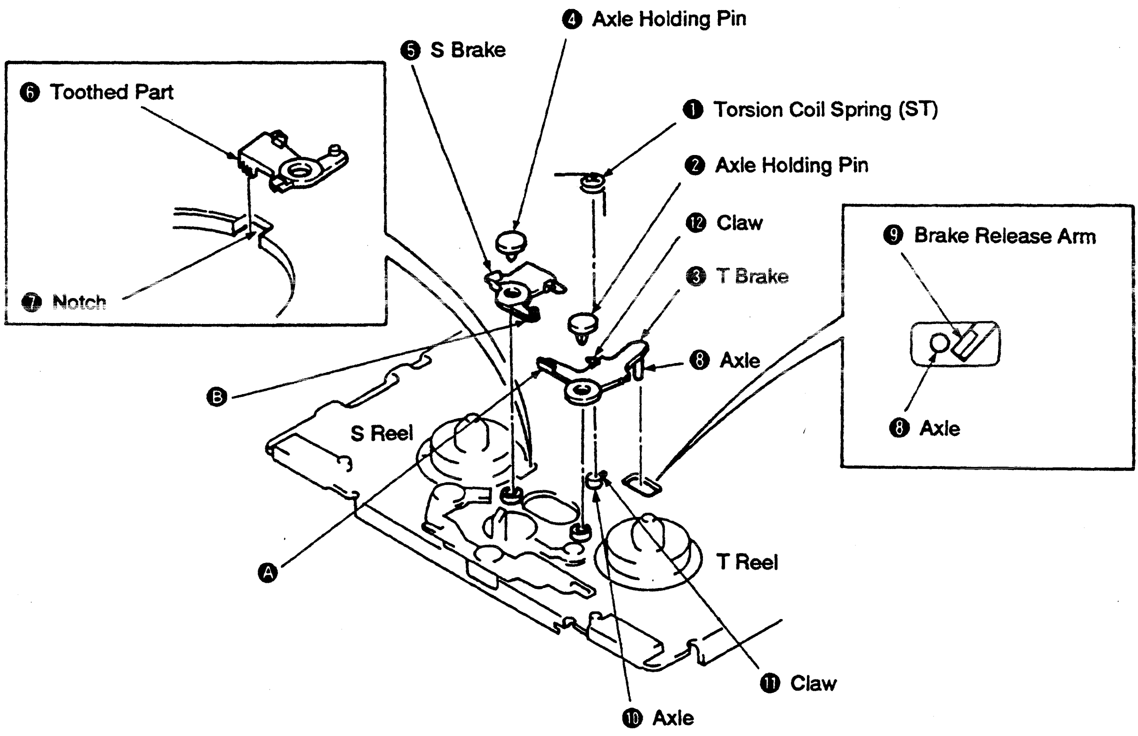

❹ Axle Holding Pin
❺ S Brake
❻ Toothed Part
❼ Notch
❶ Torsion Coil Spring (ST)
❷ Axle Holding Pin
⓬ Claw
❸ T Brake
❾ Brake Release Arm
❽ Axle
Ⓑ
S Reel
❽ Axle
Ⓐ
T Reel
⓫ Claw
❿ Axle

Fig. 3-4.

3-5. LB BRAKE, AXLE HOLDING PINS

1. Removal (See Fig. 3-5.)

1) Remove the screw ❶, then remove the TL holding plate ❷.
2) Remove the axle holding pin ❸, then remove the LB brake ❹.
3) Remove the axle holding pin ❺, then remove the LB lever ❻.

2. Installation (See Fig. 3-5.)

1) Mount the LB lever ❻ matching it to pin ❼ of the LB gear, then secure it with the axle holding pin ❺.
2) Insert the pin ❽ into the notch ❾ of the LB lever ❻, then mount the LB brake ❹ while inserting the toothed part ❿ into the notch ⓫.
3) Insert the axle holding pin ❸.
4) Align the dowel ⓬ with the hole ⓭, then mount the TL holding plate and secure it with the screw ❶.

Note: Confirm that the claws of axle holding pins ❸ and ❺ are not broken before assembling.

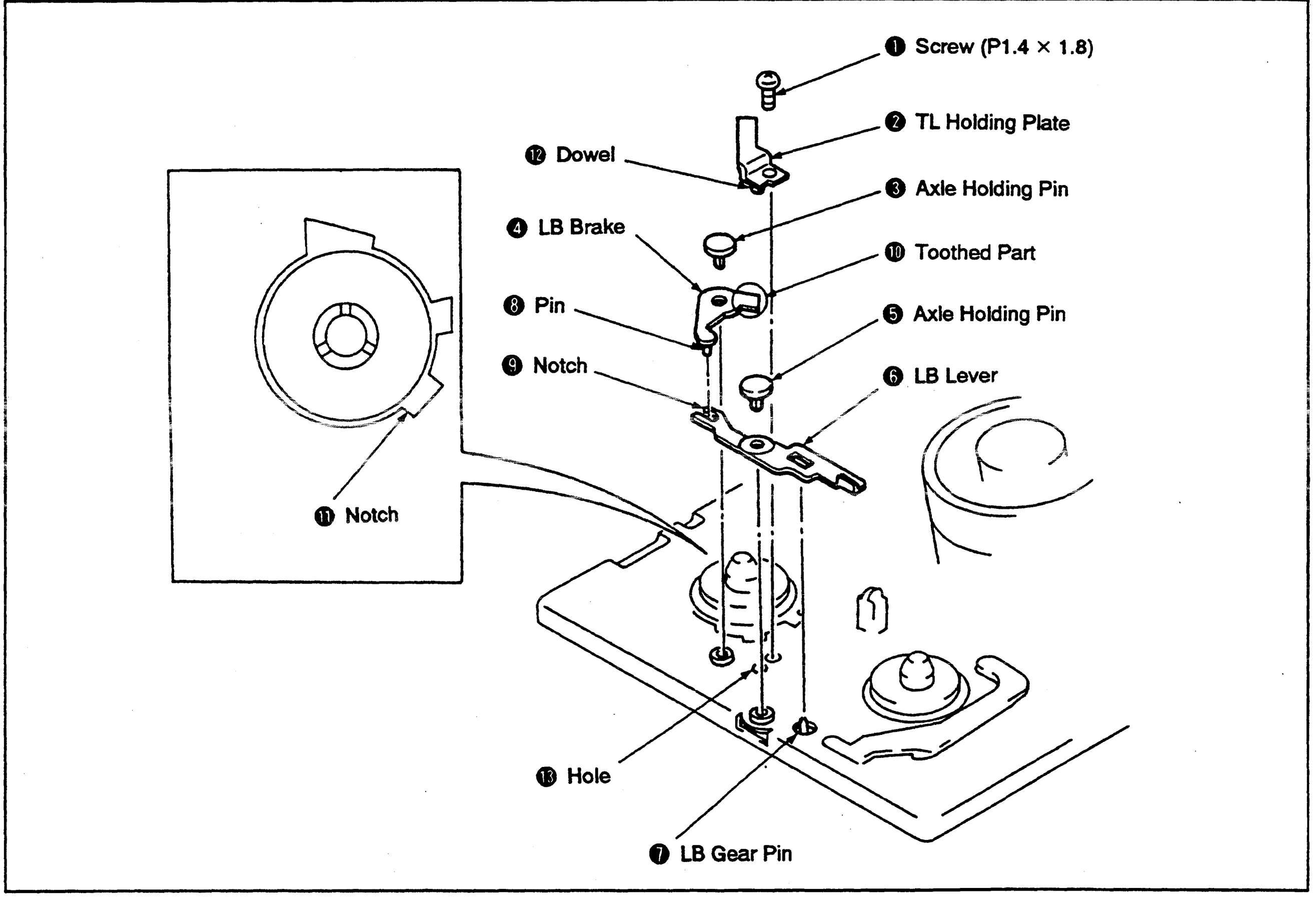

❶ Screw (P1.4 × 1.8)
❷ TL Holding Plate
⓬ Dowel
❸ Axle Holding Pin
❹ LB Brake
❿ Toothed Part
❽ Pin
❺ Axle Holding Pin
❾ Notch
❻ LB Lever
⓫ Notch
⓭ Hole
❼ LB Gear Pin

Fig. 3-5.

3-6. LB RELEASE ARM

1. Removal (See Fig. 3-6.)

1) While pushing the claw ❶ in the direction of the arrow, remove the LB release arm ❷.

2. Installation (See Fig. 3-6.)

1) Fit the LB release arm ❷ to the axle ❸, insert protrusions ⓐ, ⓑ, ⓒ, ⓓ into the three holes ❹, then secure with the claw ❶.

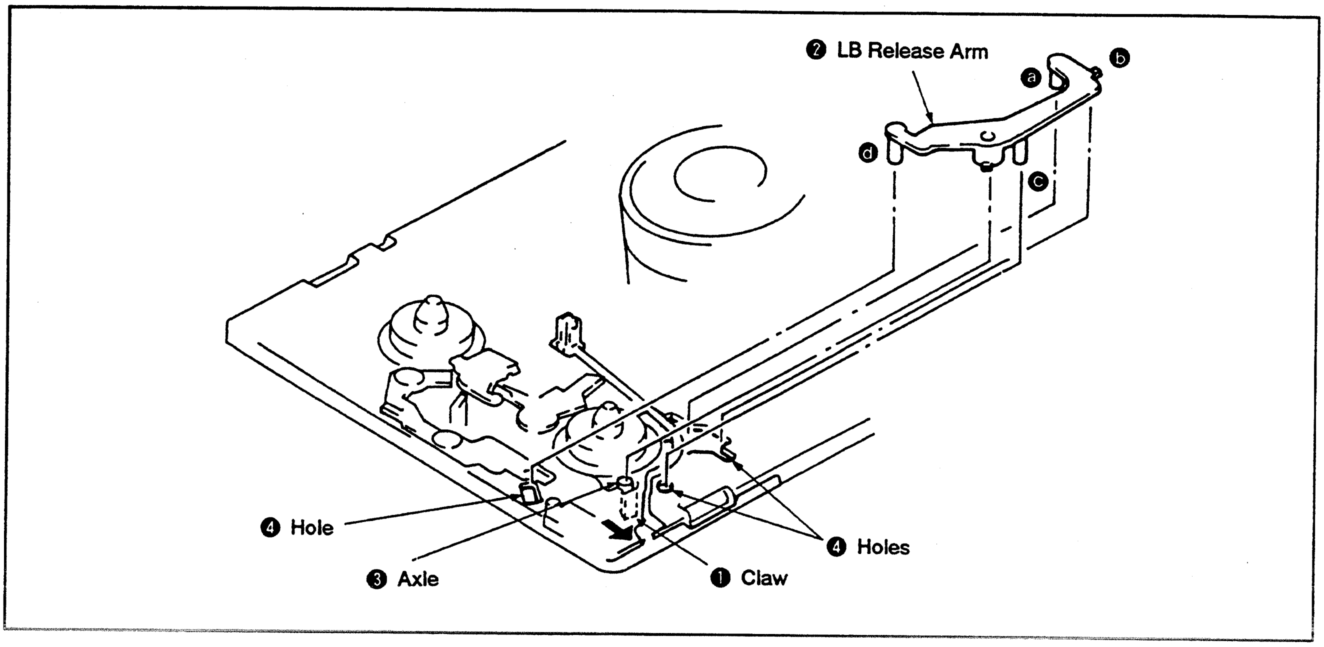

❷ LB Release Arm
ⓑ
ⓐ
ⓓ
ⓒ
❹ Hole
❹ Holes
❸ Axle
❶ Claw

Fig. 3-6.

3-7. RK STOPPER, RK STOPPER ARMS

1. Removal (See Fig, 3-7.)

1) Remove the torsion coil spring (RK) ❶.
2) Open the chassis claw ❷, then remove the RK stopper arm ❸.
3) Remove the RK stopper ❹.

2. Installation (See Fig. 3-7.)

1) Mount the RK stopper ❹ onto the axle ❺.
2) Mount the RK stopper arm ❸ onto the axle ❻, insert Pin ❿ into hole ⓫, then hook the claw ❷ of the chassis to the hole ❼.
3) Insert the torsion coil spring (RK) ❶ into the axle ❺, then hook it to claws ❽ and ❾.

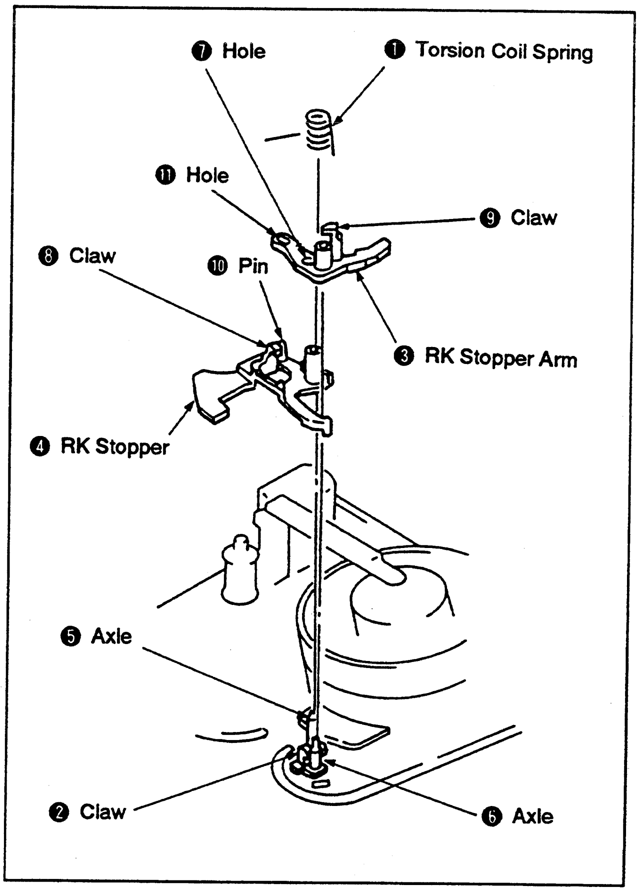

❼ Hole
❶ Torsion Coil Spring
⓫ Hole
❾ Claw
❽ Claw
❿ Pin
❸ RK Stopper Arm
❹ RK Stopper
❺ Axle
❷ Claw
❻ Axle

Fig. 3-7.

3-8. PINCH ARM ASSEMBLY, TG-7 ASSEMBLY

1. Removal (See Fig. 3-8.)

1) Set the $\boxed{\text{IB}}$ mode.
2) Remove the stopper washer ❶, then remove the pinch arm assembly ❷.
3) Bend the claw ❹ inside hole ❸ in the direction of the arrow using a thin screwdriver or the like, then remove the TG-7 plate spring ❺.
4) Remove the TG-7 arm assembly ❻.

2. Installation (See Fig. 3-8.)

1) Grease the inner surfaces of hole ❼ (See Fig. A).
2) Insert the axle ❽ of the TG-7 arm assembly ❻ into the hole ❼.
3) Grease the shaded section ⓐ (See Fig. A).
4) Insert the TG-7 plate spring ❺ into the hole ❸, then secure it with the claw ❹.
5) Apply half a drop of oil to the axle ❾ (See Fig. B).
6) Fit the pinch arm assembly ❷ to the axle ❾ and insert the pinch roller sub arm assembly tab ❿ into the ⓑ part.
7) Install the stopper washer ❶.

Note:
- Take care not to grease the screw ⓫ of the TG-7 arm assembly ❻ (See Fig. A).
- When fitting the pinch arm assembly ❷ to the axle ❾, make sure that it does not touch the TG-7 guide ⓬ or the rubber roller ⓭.
- After assembling, be sure to perform tape path adjustment as described in section 4.

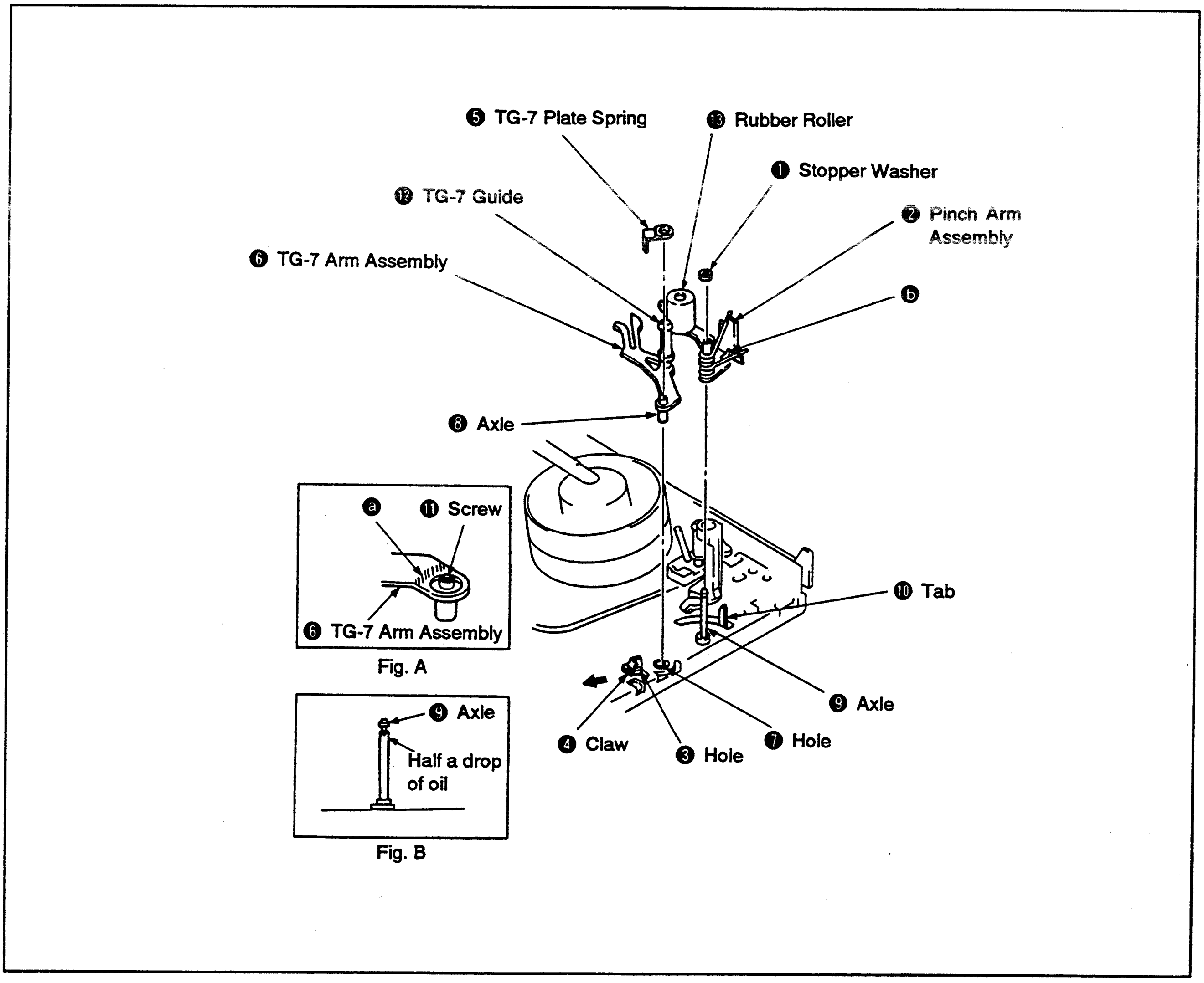

❺ TG-7 Plate Spring
⓭ Rubber Roller
❶ Stopper Washer
⓬ TG-7 Guide
❷ Pinch Arm Assembly
❻ TG-7 Arm Assembly
ⓑ
❽ Axle
ⓐ
⓫ Screw
❻ TG-7 Arm Assembly
Fig. A
❾ Axle
Half a drop of oil
Fig. B
❿ Tab
❾ Axle
❹ Claw
❸ Hole
❼ Hole

Fig. 3-8.

3-9. TG-2 ASSEMBLY

1. Removal (See Fig. 3-9.)

1) Remove the TG-2 upper flange assembly ❶.
2) Remove the TG-2 roller ❷, the TG-2 sleeve ❸, the TG-2 lower flange ❹ and the compression spring ❺.

2. Installation (See Fig. 3-9.)

1) Mount the compression spring ❺, the TG-2 lower flange ❹, the TG-2 sleeve ❸ and the TG-2 roller ❷ to the axle.
2) Secure the TG-2 upper flange ❶ to the axle by rotating it 4 to 6 turns.

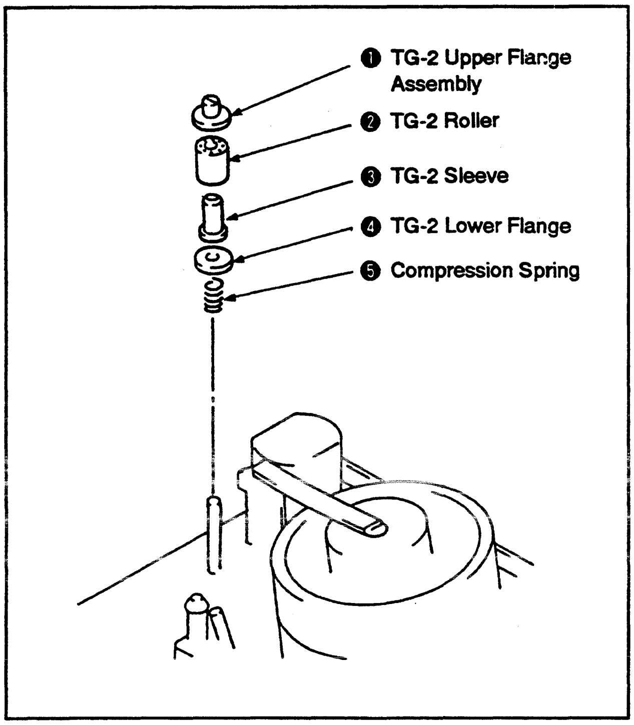

❶ TG-2 Upper Flange Assembly
❷ TG-2 Roller
❸ TG-2 Sleeve
❹ TG-2 Lower Flange
❺ Compression Spring

Fig. 3-9.

3. TG-2 Height Preset (see Fig. 3-10.)

1) Adjust height from the mechanism chassis upper surface to the TG-2 upper flange ❶ upper surface to 18.6 mm by turning the TG-2 upper flange ❶.

Note: After adjustment, be sure to perform tape path adjustment as described in section 4.

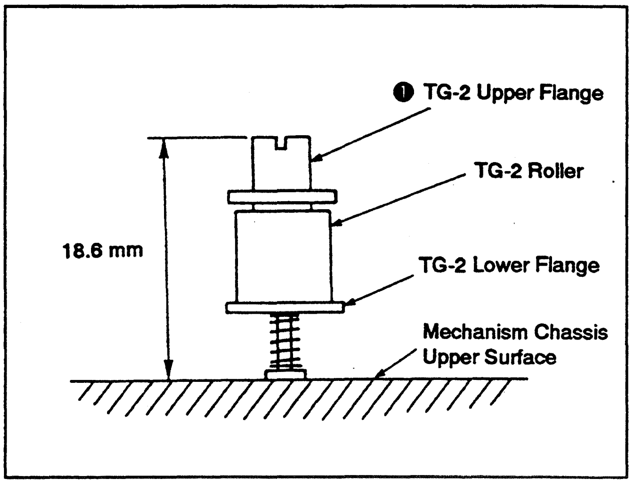

❶ TG-2 Upper Flange
TG-2 Roller
18.6 mm
TG-2 Lower Flange
Mechanism Chassis Upper Surface

Fig. 3-10.

3-10. S REEL TABLE ASSEMBLY, T REEL TABLE ASSEMBLY

1. Removal (See Fig. 3-11.)

1) Remove the S brake and T brake as described in section 3-4.
2) Remove the TL holding plate as described in section 3-5.
3) Remove the tension regulator band assembly as described in section 3-11.
4) Remove the S reel table assembly ❶.
5) Turn the stopper ❷ approx. 90 ° in the direction of the arrow Ⓐ.
6) While sliding the LB release arm ❸ in the direction of the arrow Ⓑ, remove the T reel table assembly ❹.

2. Installation (See Fig. 3-11.)

1) Apply half a drop of oil to the axle ❺ (See Fig. A).
2) Move the RK gear ❻ in the direction of the arrow Ⓒ and the TS brake ❼ in the direction of the arrow Ⓓ, putting them out of the way.
3) While sliding the LB release arm ❸ in the direction of the arrow Ⓑ, mount the T reel table assembly ❹ onto the axle ❺, then turn the stopper ❷ in the direction of the arrow Ⓔ as far as it will go.
4) Apply half a drop of oil to the axle ❽ (See Fig. B).
5) Move the RK gear ❻ in the direction of the arrow Ⓕ, the UL brake ❾ in the direction of the arrow Ⓖ and the LB brake ❿ in the direction of the arrow Ⓗ, putting them out of the way.
6) Mount the S reel table ❶ onto the axle ❽.
7) Mount the tension regulator band assembly as described in section 3-11.
8) Mount the TL holding plate as described in section 3-5.
9) Mount the S brake and T brake assemblies as described in section 3-4.

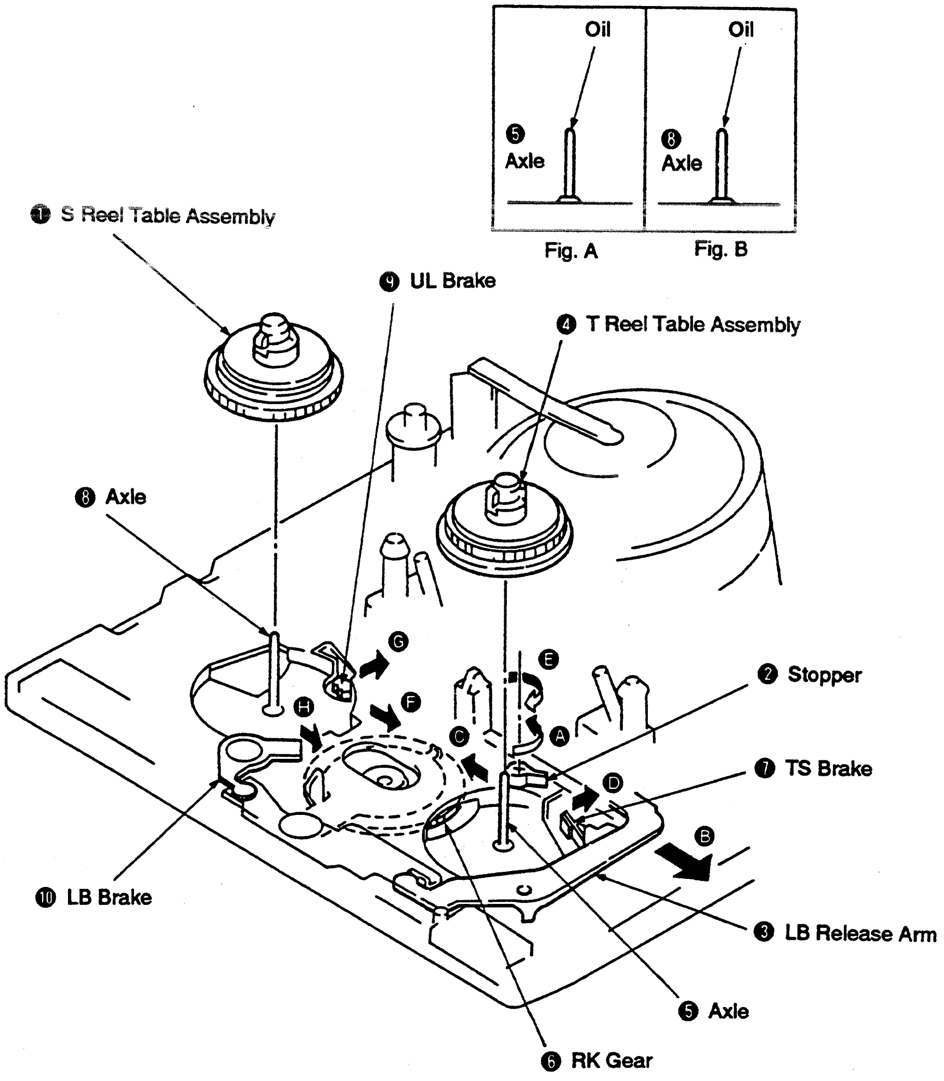

Oil
❺ Axle
Oil
❽ Axle
Fig. A
Fig. B
❶ S Reel Table Assembly
❾ UL Brake
❹ T Reel Table Assembly
❽ Axle
Ⓖ
Ⓔ
❷ Stopper
Ⓗ
Ⓕ
Ⓒ
Ⓐ
❼ TS Brake
Ⓓ
Ⓑ
❿ LB Brake
❸ LB Release Arm
❺ Axle
❻ RK Gear

Fig. 3-11.

3-11. TENSION REGULATOR BAND ASSEMBLY, TENSION REGULATOR ARM ASSEMBLY

1. Removal (See Fig. 3-12.)

1) Remove the TL holding plate as described in section 3-5.
2) Remove the screw ❶.
3) Using a thin screwdriver or the like, remove the tension regulator band assembly ❹ from the axle ❸ of tension regulator arm assembly ❷.
4) Remove the tension spring ❺.
5) Remove the stopper washer ❻ from the back of the mechanism chassis, then remove the tension regulator arm assembly ❷.
6) Open the claw ❼, then remove the adjust arm ❽.

Note: When removing the tension regulator band assembly ❹, take care not to twist or bend it, and not to touch the felt surface ❾.

2. Installation (See Fig. 3-12.)

1) Engage the adjust arm ❽ in the position shown in Fig. A, then close the claw ❼.
2) Apply half a drop of oil to the hole ❿.
3) Mount the tension regulator arm assembly ❷, then insert it into the slot ⓫ so that the ⓐ part comes to the arrow Ⓐ side of the switch lever assembly (See Fig. B).
4) While holding the tension regulator arm assembly ❷ from the mechanism chassis front, secure it with the stopper washer ❻ from the back.
5) Hook the R hook of the tension spring ❻ to the adjust arm ❽ as shown in the figure, then hook the opposite end to the tension regulator arm assembly ❷.
6) Mount the tension regulator band assembly ❹ onto the axle ❸ of tension regulator arm assembly ❷, and place it so that the felt surface ❾ comes against the shaded portion of the S reel table assembly ⓬.
7) Mount the tension regulator plate ⓭ of the tension regulator band assembly ❹ so that it is aligned with the dowel ⓮ of the mechanism chassis, then secure it temporarily with the screw ❶.
8) Mount the TL holding plate as described in section 3-5.
9) Adjust tension regulator FWD position as described in section 3-12.
10) Perform adjust arm adjustment as described in section 3-22.

Note: When mounting the tension regulator band assembly ❷, take care not to twist or bend it, and not to touch the felt surface ❾.

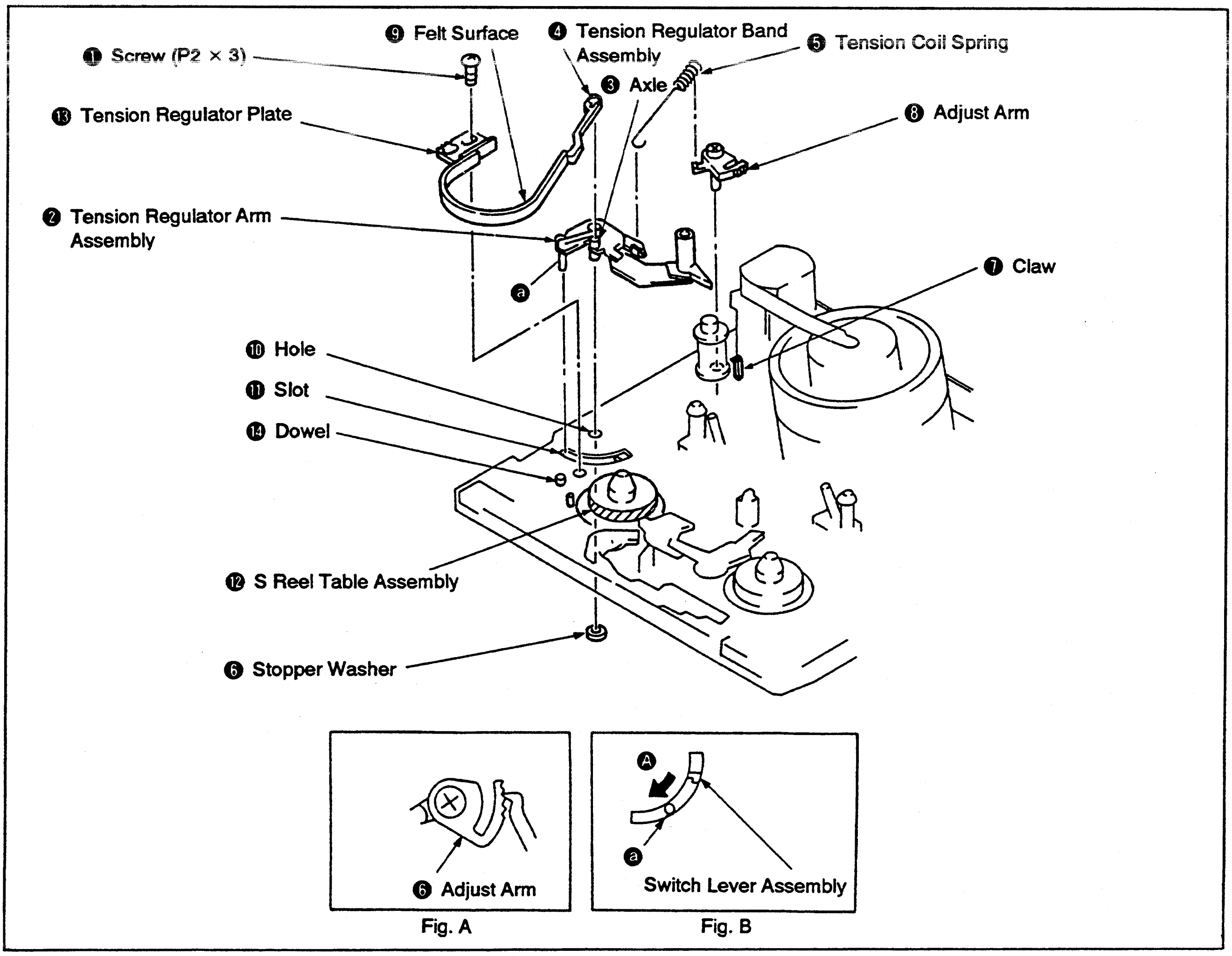

❶ Screw (P2 × 3)
❾ Felt Surface
❹ Tension Regulator Band Assembly
❺ Tension Coil Spring
❸ Axle
⓭ Tension Regulator Plate
❽ Adjust Arm
❷ Tension Regulator Arm Assembly
❼ Claw
ⓐ
❿ Hole
⓫ Slot
⓮ Dowel
⓬ S Reel Table Assembly
❻ Stopper Washer
❻ Adjust Arm
Ⓐ
ⓐ
Switch Lever Assembly

Fig. A

Fig. B

Fig. 3-12.

3-12. TENSION REGULATOR FWD POSITION PRESET (See Fig. 3-13.)

1) Load a cassette tape and set the FWD mode.
2) Confirm whether the distance between ⓐ part of the tension regulator arm ❶ and the groove ❷ of the chassis is 1.1 ± 0.3 mm. If this distance is not within the specified range, remove the cassette tape and perform the following adjustment.
3) Loosen the fixing screw ❹ of the tension regulator band assembly ❸.
4) Slide the tension regulator plate ❺ in the direction of the arrow Ⓐ if the measured distance is over the specified range, and in the direction of the arrow Ⓑ if it is under that range. Then, fix it with the screw ❹.
5) Repeat steps 1) and 2) and confirm that the distance is within the specified range.

Note: Use a cassette with the tape advanced halfway.

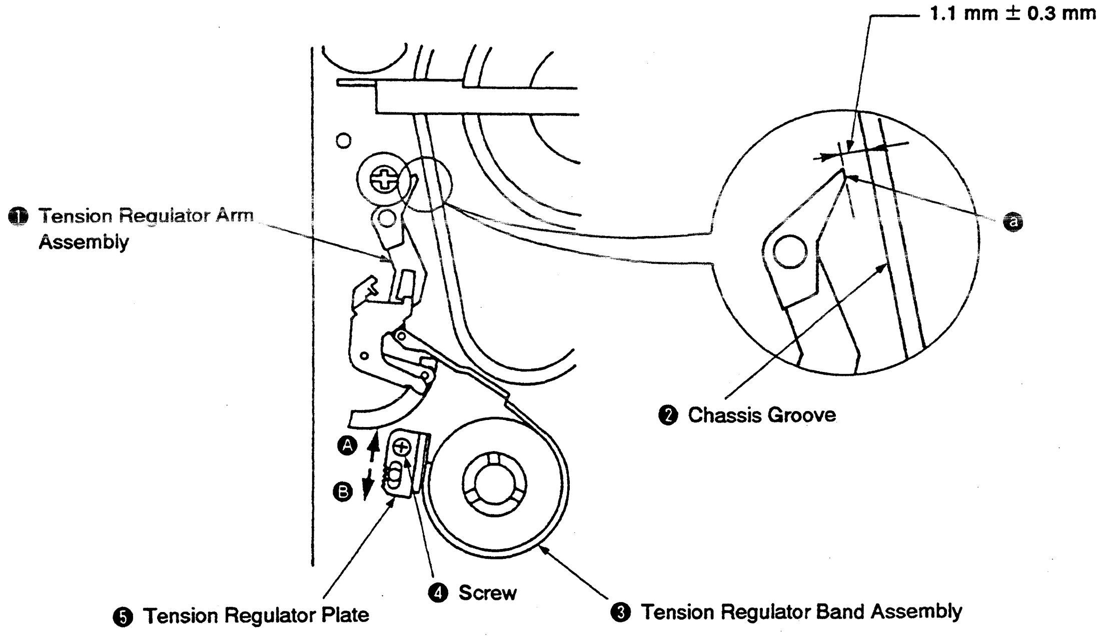

1.1 mm ± 0.3 mm
❶ Tension Regulator Arm Assembly
ⓐ
❷ Chassis Groove
Ⓐ
Ⓑ
❹ Screw
❺ Tension Regulator Plate
❸ Tension Regulator Band Assembly

Fig. 3-13.

3-13. DRUM ASSEMBLY, DEW SENSOR

1. Removal (See Fig. 3-14.)

1) Set the EJECT mode.
2) Remove the flexible board ❶ and the two connectors ❷.
3) Remove the guide guard assembly as described in section 3-2.
4) Remove the screw ❸, then remove the axle ground terminal ❹.
5) Remove the three screws ❺, then remove the drum assembly ❻ from the mechanism chassis.
6) Remove the connector ❿
7) Remove the screw ❼, then remove the dew sensor ❽.

Note:
- When removing the drum assembly ❻ from the mechanism chassis, take care not to cut the flexible board ❶ or the harness.
- Take care not to touch the head tip ❾.

2. Installation (See Fig. 3-14.)

1) Insert part ⓐ of the dew sensor ❽ into the notch ⓫ of the mechanism chassis, then secure it with the screw ❼.
2) Mount the connector ❿.
3) Clamp the harness ⓯ of the dew sensor ❽ with the reinforcing the claw ⓰ of the plate SS assembly (See Fig. A).
4) Insert the connector ❷ and the flexible board ❶ into the hole ⓬ of the mechanism chassis, align the drum assembly ❻ with the two dowels ⓭ and secure it with the three screws ❺.
5) Align the axle ground terminal ❷ with the two dowels ⓮ of the mechanism chassis and secure it with the screw ❸.
6) Mount the guide guard assembly as described in section 3-2.
7) Mount the two connectors ❷ and the flexible board ❶.

Note:
- Take care not to cut the flexible board ❶ or the harness ⓯.
- Take care not to touch the head tip ❾.
- After assembling, be sure to perform Tape Path Adjustment following instructions in section 4.

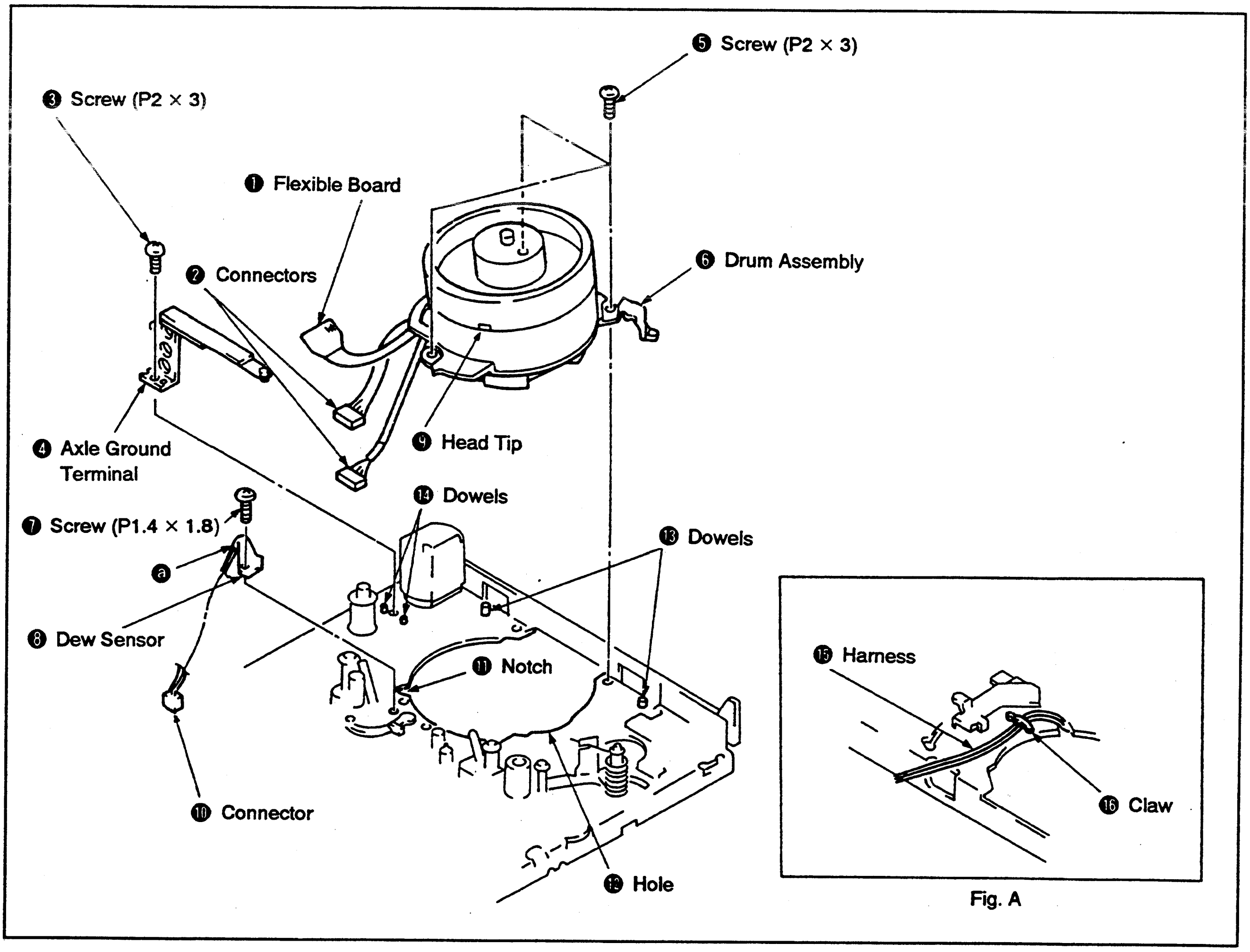

❺ Screw (P2 × 3)
❸ Screw (P2 × 3)
❶ Flexible Board
❷ Connectors
❻ Drum Assembly
❹ Axle Ground Terminal
❾ Head Tip
⓮ Dowels
❼ Screw (P1.4 × 1.8)
⓭ Dowels
ⓐ
❽ Dew Sensor
⓫ Notch
⓯ Harness
⓰ Claw
❿ Connector
⓬ Hole
Fig. A

Fig. 3-14.

3-14. EJECT LEVER, SWITCH LEVER ASSEMBLY, PINCH ROLLER SUB ARM ASSEMBLY

1. Removal (See Fig. 3-15.)

1) Remove the DC motor (capstan motor) as described in section 3-3.
2) Set the STOP mode.
3) Remove the claw ❶, then remove the eject lever ❷.
4) Remove the stopper washer ❸, then remove the switch lever assembly ❹.
5) Remove the pinch roller load spring ❺.
6) Remove the stopper washer ❻, then remove the pinch roller sub arm assembly ❼.

2. Installation (See Fig. 3-15.)

1) Grease the axle ❽ (See Fig. A).
2) Assemble by inserting ⓐ part of the pinch roller sub arm assembly ❼ into the slot ❾, then insert the pin ❿ into the loading lever assembly notch ⓫.
3) Secure with the stopper washer ❻.
4) Mount the pinch roller load spring ❺ by catching its ⓑ end between the claw ⓬ and the chassis side and its ⓒ end to the claw ⓬.
5) Apply half a drop of oil to the axle ⓭ (See Fig. B).
6) Align the groove ⓮ of the switch lever assembly ❹ with the mode detector switch protrusion ⓯, mount it on the axle ⓭, then insert the pin ⓰ into the drive gear (left) assembly ⓱ outer groove.
7) Secure with the stopper washer ❸.
8) Mount the eject lever ❷ and close the claw ❶.
9) Mount the DC motor (capstan motor) as described in section 3-3.

Note: When mounting the switch lever assembly ❹ onto the axle ⓭ with the tension regulator arm assembly installed, set the pin ⓰ to the arrow Ⓐ side of the switch lever assembly ❹.

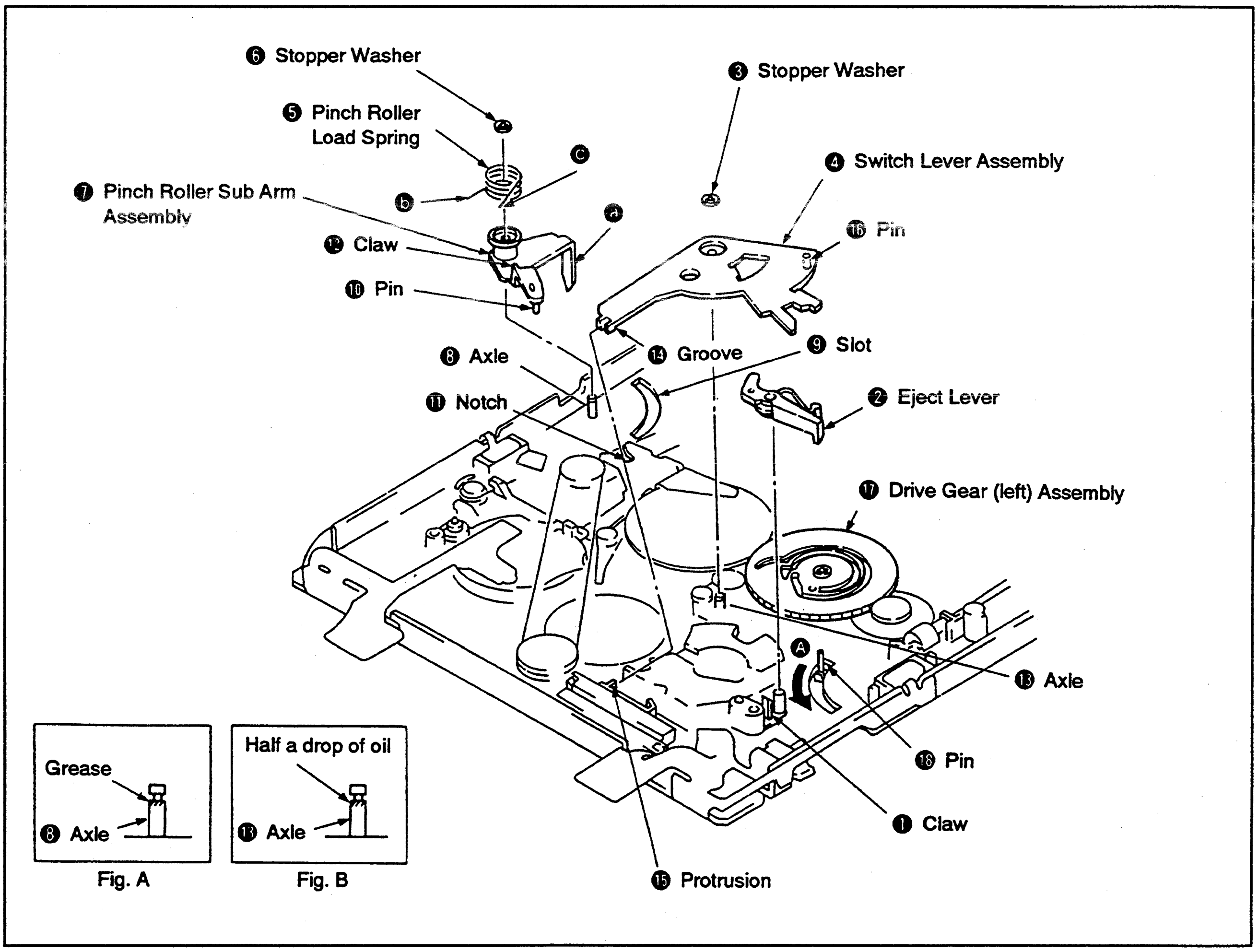

❻ Stopper Washer
❺ Pinch Roller Load Spring
ⓒ
❼ Pinch Roller Sub Arm Assembly
ⓑ
ⓐ
⓬ Claw
❿ Pin
❽ Axle
⓫ Notch
❸ Stopper Washer
❹ Switch Lever Assembly
⓰ Pin
⓮ Groove
❾ Slot
❷ Eject Lever
⓱ Drive Gear (left) Assembly
Ⓐ
⓭ Axle
⓰ Pin
❶ Claw
⓯ Protrusion
Grease
❽ Axle
Half a drop of oil
⓭ Axle

Fig. A

Fig. B

Fig. 3-15.

3-15. TIMING BELT (L) , RC GEAR ASSEMBLY, LOADING LEVER ASSEMBLY, TIMING BELT (S), CONNECTING GEAR ASSEMBLY

1. Removal (See Fig. 3-16.)

1) Remove the DC motor (capstan motor) as described in section 3-3.
2) Remove the pinch roller sub arm assembly as described in section 3-14.
3) Set the STOP mode.
4) Remove the stopper washer ❶ , then remove the RC gear assembly ❷ from the axle ❹ with the timing belt (L) ❸ attached.
5) Remove the timing belt (L) ❸ from the idler pulley assembly ❺.
6) Remove the stopper washer ❻ and remove the loading lever assembly ❽ while pushing the claw ❼ in the direction of the arrow Ⓐ.
7) Turn the stopper ❾ approx. 90 ° in the direction of the arrow Ⓑ.
8) Remove the connecting gear assembly ⓫ from the axle ⓰ with the timing belt (S) ❿ attached.
9) Remove the timing belt (S) ❿ from the idler pulley assembly ❺.

Note: When removing the connecting gear ⓫ , take care not touch the flange section ⓑ.

2. Installation (See Fig. 3-16.)

1) Apply half a drop of oil to the axle ⓰ (See Fig. F).
2) Hook one end of the timing belt (S) ❿ onto the connecting gear assembly ⓫ and the other end onto gear ⓓ of the idler pulley assembly ❺. (Refer to the figure.)
3) Mount the connecting gear assembly ⓫ with the timing belt (S) ❿ attached to the axle ⓰.
4) Turn the stopper ❾ in the direction of the arrow Ⓒ as far as it will go.
5) Apply half a drop of oil to the axle ⓬ (See Fig. A).
6) Fit the loading lever assembly ❽ to the axle ⓬, secure the ⓐ part with the claw ❼ and place the pin ⓭ into the groove of the drive gear (right) assembly ⓮.
7) Install the stopper washer ❻.
8) Place the timing belt (L) ❸ around the gears of the RC gear assembly ❷ indicated in Fig. B, and its opposite side around the gear ⓒ of the idler pulley assembly ❺. (See Fig. E.)
9) Mount the RC gear assembly ❷ onto the axle ❹ with the timing belt (L) ❸ attached, and engage it with the gear of the RK gear assembly ⓯.
10) Install the stopper washer ❶.
11) Grease parts of the loading lever assembly ❽ indicated in Fig. C.
12) Mount the pinch roller sub arm assembly as described in section 3-14.
13) Mount the DC motor (capstan motor) as described in section 3-3.

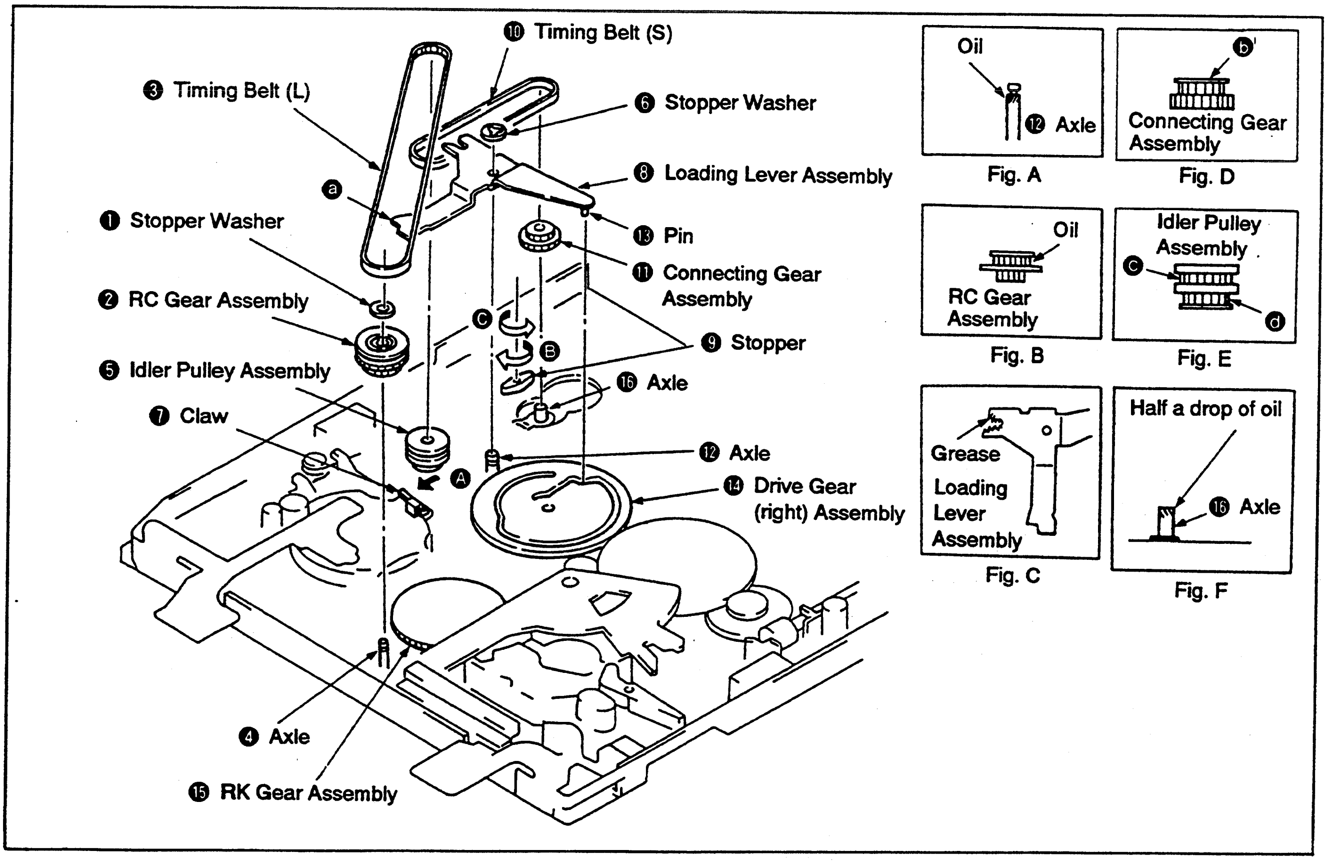

❿ Timing Belt (S)
❸ Timing Belt (L)
❻ Stopper Washer
❽ Loading Lever Assembly
ⓐ
❶ Stopper Washer
⓭ Pin
⓫ Connecting Gear Assembly
❷ RC Gear Assembly
Ⓒ
❾ Stopper
Ⓑ
❺ Idler Pulley Assembly
⓰ Axle
❼ Claw
⓬ Axle
Ⓐ
⓮ Drive Gear (right) Assembly
❹ Axle
⓯ RK Gear Assembly
Oil
⓬ Axle
Fig. A
ⓑ'
Connecting Gear Assembly
Fig. D
Oil
RC Gear Assembly
Fig. B
Idler Pulley Assembly
ⓒ
ⓓ
Fig. E
Grease
Loading Lever Assembly
Fig. C
Half a drop of oil
⓰ Axle
Fig. F

Fig. 3-16.

3-16. IDLER PULLEY, TS BRAKE ASSEMBLY, LB GEAR ASSEMBLY, RK GEAR ASSEMBLY

1. Removal (See Fig. 3-17.)

1) Remove the DC motor (capstan motor) as described in section 3-3.
2) Remove the switch lever assembly as described in section 3-14.
3) Remove the timing belt (L), the RC gear assembly, the loading lever assembly, the timing belt (S) and the connecting gear assembly described in section 3-15.
4) Set the STOP mode.
5) Remove the stopper washer ❶, then remove the idler pulley ❷.
6) Open the claw ❸, then remove the TS brake assembly ❹.
7) Remove the torsion coil spring (LB) ❺.
8) Remove the stopper washer ❻, then remove the LB gear assembly ❼.
9) Remove the RK gear assembly ❽.

Note: When removing the idler pulley ❷, take care not to touch the flange section ⓐ. (See Fig. C.)

2. Installation (See Fig. 3-17.)

1) Apply half a drop of oil to the axle ❾ (See Fig. A).
2) Mount the RK gear assembly ❽ onto the axle ❾, keeping it in horizontal position.
3) Apply half a drop of oil to the axle ❿ (See Fig. B).
4) Mount the LB gear assembly ❼ onto the axle ❿ and secure it with the stopper washer ❻.
5) Insert the torsion coil spring (LB) ❺ into the axle ⓫, then hook it to the mechanism chassis notch ⓬ and to the tab ⓭.
6) Mount the TS brake assembly ❹ and close the claw ❸.
7) Apply half a drop of oil to the axle ⓮ (See Fig. D).
8) Mount the idler pulley ❷ onto the axle ⓮, then secure it with the stopper washer ❶.
9) Mount the timing belt (L), the RC gear assembly, the loading lever assembly, the timing belt (S) and the connecting gear assembly as described in section 3-15.
10) Mount the switch lever assembly as described in section 3-14.
11) Mount the DC motor (capstan motor) as described in section 3-3.

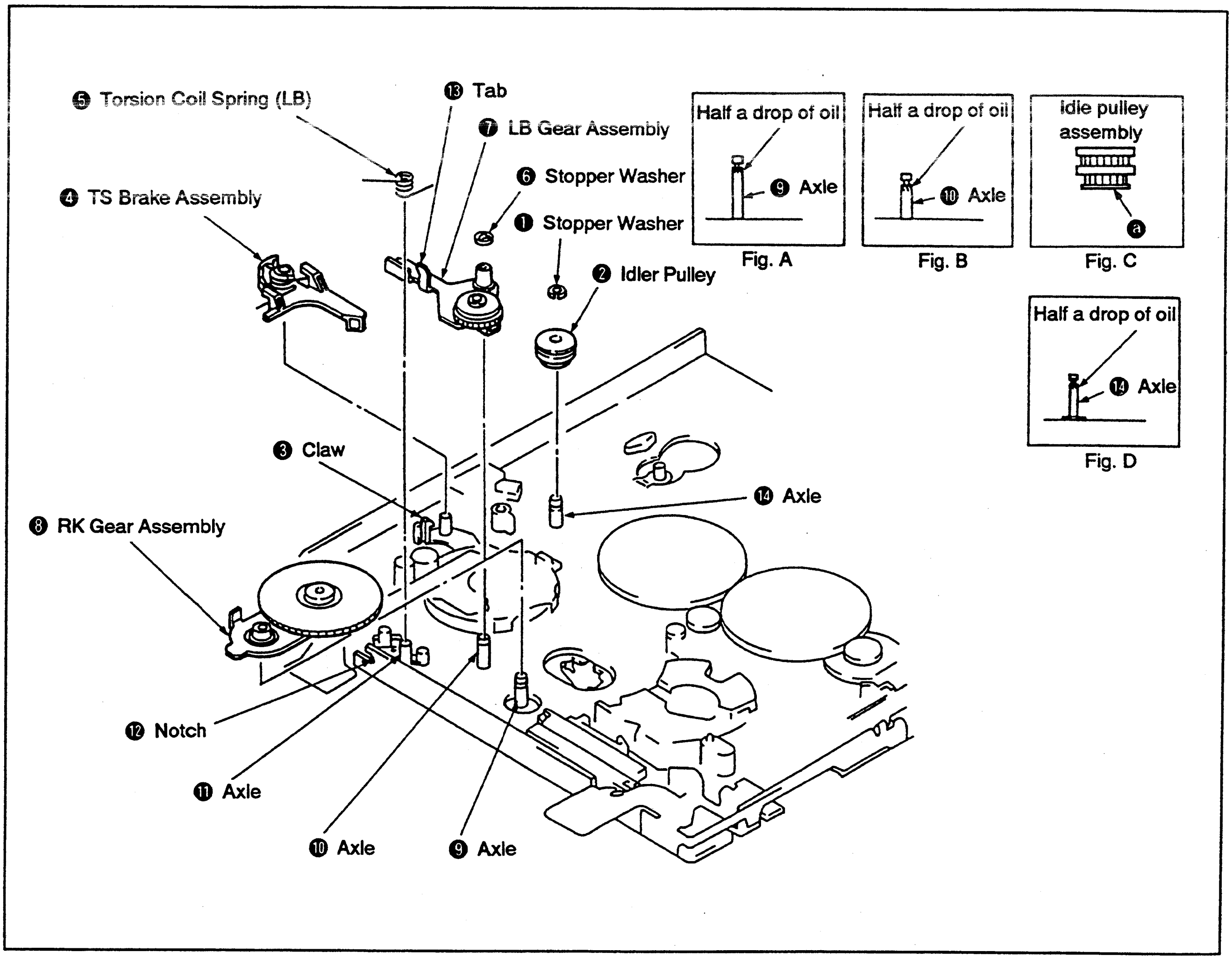

❺ Torsion Coil Spring (LB)
⓭ Tab
❼ LB Gear Assembly
❻ Stopper Washer
❶ Stopper Washer
❹ TS Brake Assembly
❷ Idler Pulley
❸ Claw
❽ RK Gear Assembly
⓮ Axle
⓬ Notch
⓫ Axle
❿ Axle
❾ Axle
Half a drop of oil
❾ Axle
Fig. A
Half a drop of oil
❿ Axle
Fig. B
idle pulley assembly
ⓐ
Fig. C
Half a drop of oil
⓮ Axle
Fig. D

Fig. 3-17.

3-17. UL GEAR, UL BRAKE, UL ARM, LB PLATE SPRING

1. Removal (See Fig. 3-18.)

1) Remove the switch lever assembly as described in section 3-14.
2) Remove the stopper washer ❶ , then remove the UL gear ❷.
3) Remove the UL arm ❸ , the 1.6 mm-diameter poly washer ❹ and the LB plate spring ❺.
4) Remove the UL brake ❻.

2. Installation (See Fig. 3-18.)

1) Mount the UL brake ❻.
2) Apply half a drop of oil to the axle ❼ (See Fig. A).
3) Mount the LB plate spring ❺ to the axle ❼ as shown in Fig. B, then install the 1.6mm-diameter poly washer ❹.
4) Mount the UL arm ❸ to the axle ❼ so that the protrusion ❽ comes into the groove ❾ of the UL brake ❻.
5) Mount the UL gear ❷ to the axle ❼ and engage it with the gear of the drive gear (left) assembly ❿.
6) Install the stopper washer ❶.
7) Mount the switch lever assembly as described in section 3-14.

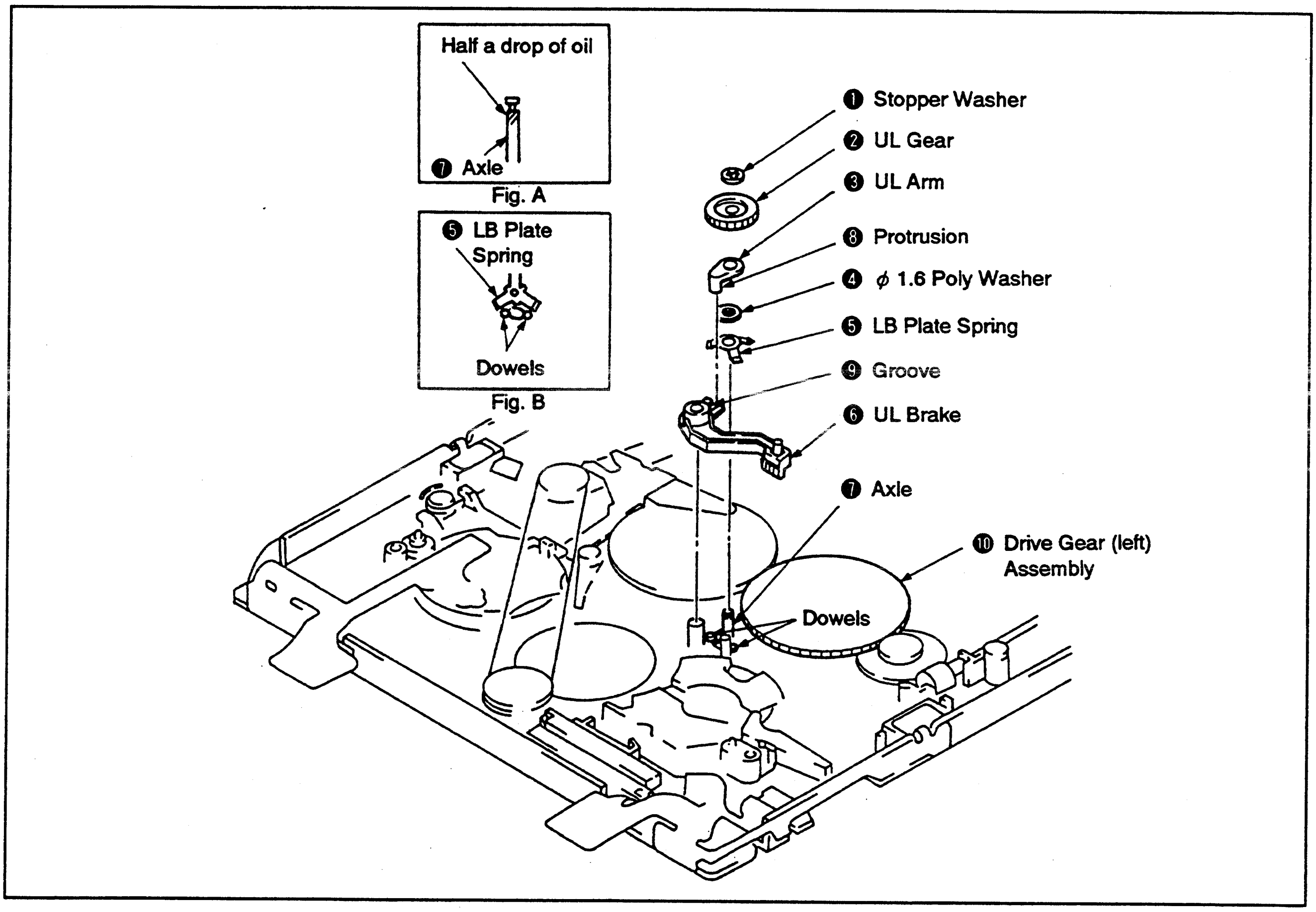

Half a drop of oil
❼ Axle
Fig. A
❺ LB Plate Spring
Dowels
Fig. B
❶ Stopper Washer
❷ UL Gear
❸ UL Arm
❽ Protrusion
❹ ϕ 1.6 Poly Washer
❺ LB Plate Spring
❾ Groove
❻ UL Brake
❼ Axle
❿ Drive Gear (left) Assembly
Dowels

Fig. 3-18.

3-18. COASTER (RIGHT) ASSEMBLY, DRIVE GEAR (RIGHT) ASSEMBLY

1. Removal (See Fig. 3-19.)

1) Remove the DC motor (capstan motor) as described in section 3-3.
2) Remove the drum unit as described in section 3-13.
3) Remove the switch lever assembly as described in section 3-14.
4) Remove the timing belt (L), the RC gear assembly and the loading lever assembly as described in section 3-15.
5) Set the STOP mode.
6) Remove the screw ❶, then remove the coaster plate spring ❷ and the coaster (right) assembly ❸.
7) Remove the two screws ❹, then remove the reinforcing plate TT ❺.
8) Remove the stopper washer 1.5 ❻, then remove the drive gear (right) assembly ❼.

2. Installation (See Fig. 3-19.)

1) Grease the points of the mechanism chassis shown in Fig A.
2) Apply half a drop of oil to the axle ❽ (See Fig. F).
3) Grease pin ❾, axle ❿ and dowel ⓮ of the coaster (right) assembly ❸ (See Fig. D).
4) Mount by aligning the pin ❾ and the axle ❿ with the slot ⓫ of the mechanism chassis.
5) Move the brake release arm ⓬ in the direction of the arrow Ⓐ to put it out of the way.
6) Mount the drive gear (right) assembly ❼ to the axle ❽, and engage it with the drive gear (left) assembly ⓭ as shown in Fig. B.
7) Align the ⓐ part with the ⓑ part, and the hole ⓮ with the pin ❾ of the coaster (right) assembly ❸.
8) Install the stopper washer 1.5 ❻.
9) Mount by aligning the coaster plate spring ❷ with the axle ❿ of the coaster (right) assembly ❸ and pin ❾, then secure with the screw ❶.
10) Mount the reinforcing plate TT ❺ aligning it with the dowel ⓯, then tighten the two screws ❹ in the indicated order.
11) Grease the points indicated in Figs. C and E.
12) Mount the timing belt (L), the RC gear assembly and the loading lever assembly as described in section 3-15.
13) Mount the switch lever assembly as described in section 3-14.
14) Mount the drum unit as described in section 3-13.
15) Mount the DC motor (capstan motor) as described in section 3-3.

Note:
- Screw ❶ should be tightened with a tightening torque of approx. 500g•cm. If tightened too much, the coaster (right) assembly ❸ and the coaster plate spring ❷ will be deformed.
- After installing, be sure to perform tape path adjustment as described in section 4.

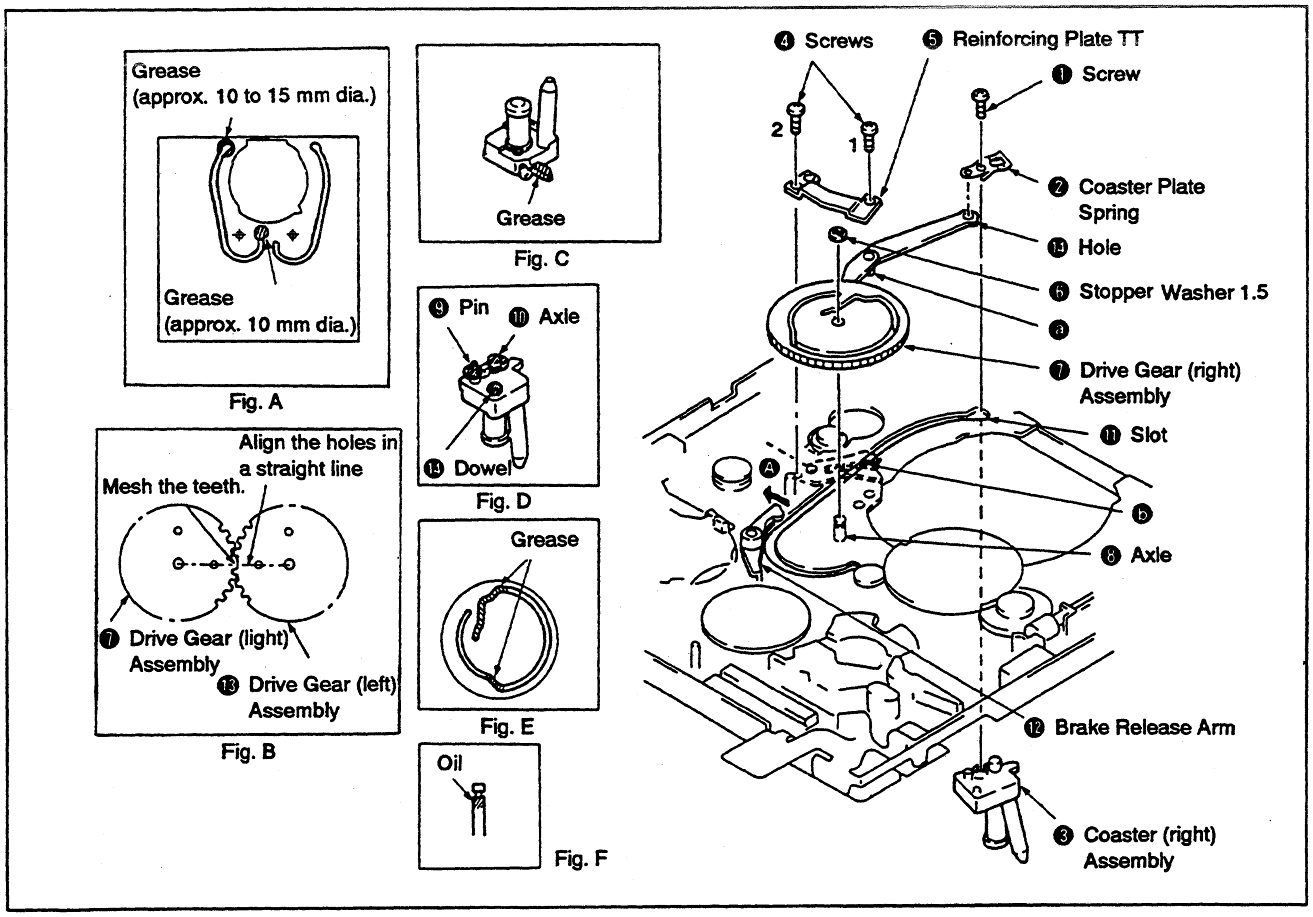

Grease
(approx. 10 to 15 mm dia.)
Grease
(approx. 10 mm dia.)
Fig. A
Grease
Fig. C
❾ Pin
❿ Axle
⓯ Dowel
Fig. D
Align the holes in a straight line
Mesh the teeth.
❼ Drive Gear (light) Assembly
⓭ Drive Gear (left) Assembly
Fig. B
Grease
Fig. E
Oil
Fig. F
❹ Screws
❺ Reinforcing Plate TT
❶ Screw
2
1
❷ Coaster Plate Spring
⓮ Hole
❻ Stopper Washer 1.5
ⓐ
❼ Drive Gear (right) Assembly
⓫ Slot
Ⓐ
ⓑ
❽ Axle
⓬ Brake Release Arm
❸ Coaster (right) Assembly

Fig. 3-19.

3-19. COASTER (LEFT) ASSEMBLY, DRIVE GEAR (LEFT) ASSEMBLY

1. Removal (See Fig. 3-20.)

1) Remove the DC motor (capstan motor) as described in section 3-3.
2) Remove the drum assembly as described in section 3-13.
3) Remove the switch lever assembly and the pinch roller sub-arm assembly as described in section 3-14.
4) Remove the timing belt (L), the RC gear assembly and the loading lever assembly as described in section 3-15.
5) Remove the coaster (right) assembly and the drive gear (right)assembly as described in section 3-18.
6) Remove the screw ❶, then remove the coaster plate spring ❷ and the coaster (left) assembly ❸.
7) Remove the two screws ❹, then remove the reinforcing plate SS assembly ❺.
8) Remove the stopper washer 1.5 ❻, then remove the drive gear (left) assembly ❼.

2. Installation (See Fig. 3-20.)

1) Grease the points of the mechanism chassis shown in Fig A.
2) Apply half a drop of oil to the axle ❽ (See Fig. E).
3) Grease pin ❾, axle ❿ and dowel ⓯ of the coaster (left) assembly ❸ (See Fig. B).
4) Mount by aligning the pin ❾ and the axle ❿ with the slot ⓫ of the mechanism chassis.
5) Fit the drive gear (left) assembly ❼ to the axle ❽, and mount so that the gear engages with the wheel gear ⓬ and the UL gear ⓭.
6) Align the ⓐ part with the slot ⓫, and the hole ⓮ with the pin ❾ of the coaster (left) assembly ❸.
7) Install the stopper washer 1.5 ❻.
8) Mount by aligning the coaster plate spring ❷ with the axle ❿ and pin ❾ of the coaster (left) assembly ❸, then secure with the screw ❶.
9) Mount the reinforcing plate SS assembly ❺ aligning it with the dowel ⓯, then tighten the two screws ❹ in the indicated order.
10) Grease points indicated in Figs. C and D.
11) Mount the coaster (right) assembly and the drive gear (right)assembly as described in section 3-18.
12) Mount the timing belt (L), the RC gear assembly and the loading lever assembly as described in section 3-15.
13) Mount the switch lever assembly and the pinch roller sub arm assembly as described in section 3-14.
14) Mount the drum assembly as described in section 3-13.
15) Mount the DC motor (capstan motor) as described in section 3-3.

Note:
- Screw ❶ should be tightened with a tightening torque of approx. 500g•cm. If tightened too much, the coaster (right) assembly ❸ and the coaster plate spring ❷ will be deformed.
- After installing, be sure to perform tape path adjustment as described in section 4.

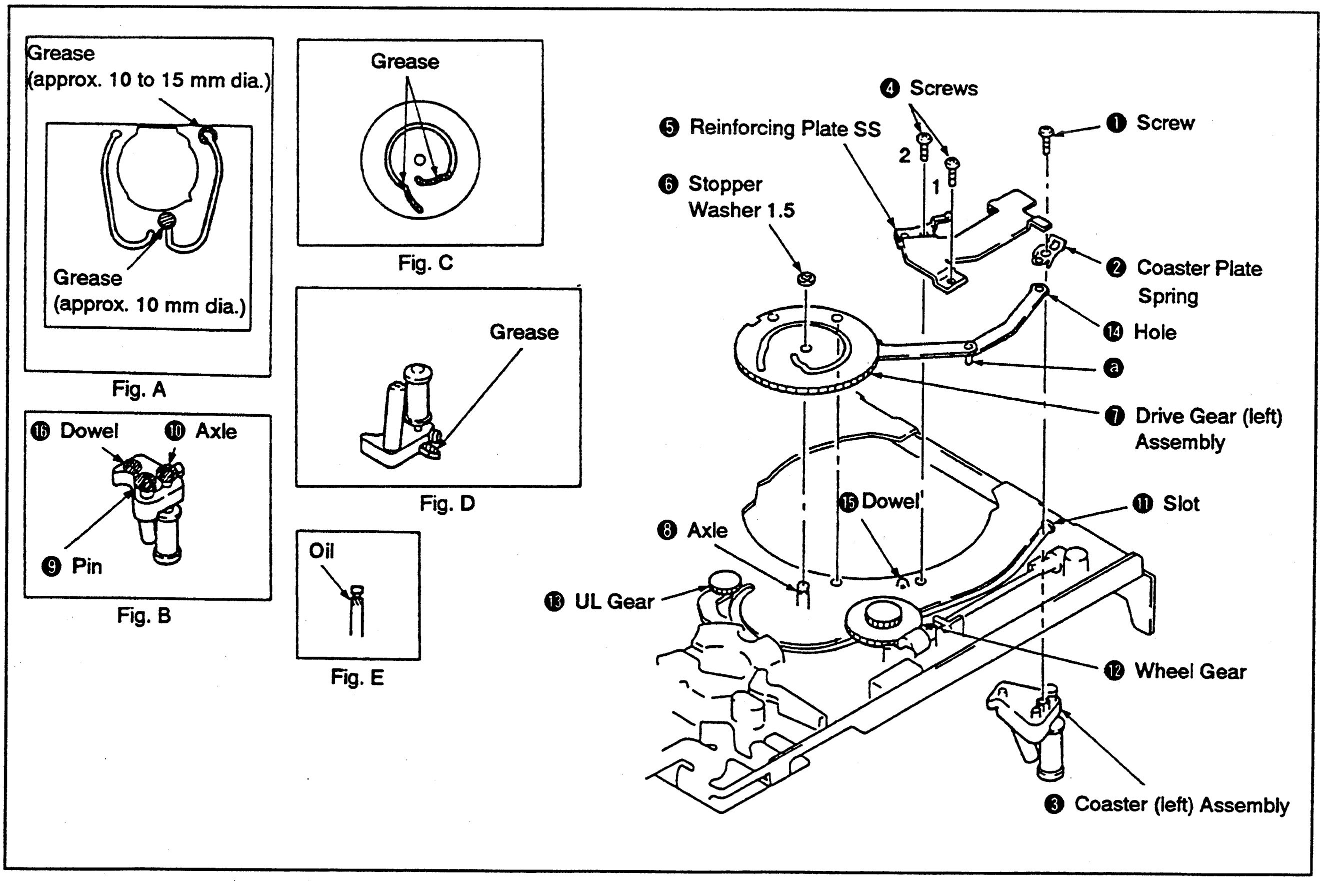

Grease (approx. 10 to 15 mm dia.)
Grease (approx. 10 mm dia.)
Fig. A
⓯ Dowel
❿ Axle
❾ Pin
Fig. B
Grease
Fig. C
Grease
Fig. D
Oil
Fig. E
❹ Screws
❺ Reinforcing Plate SS
2
1
❶ Screw
❻ Stopper Washer 1.5
❷ Coaster Plate Spring
⓮ Hole
ⓐ
❼ Drive Gear (left) Assembly
⓯ Dowel
⓫ Slot
❽ Axle
⓭ UL Gear
⓬ Wheel Gear
❸ Coaster (left) Assembly

Fig. 3-20.

3-20. LOADING MOTOR, BRAKE RELEASE ARM, WHEEL GEAR, WORM ASSEMBLY

1. Removal (See Fig. 3-21.)

1) Remove the DC motor (capstan motor) as described in section 3-3.
2) Remove the switch lever assembly and the pinch roller sub arm assembly as described in section 3-14.
3) Remove the timing belt (L), the RC gear assembly and the loading lever assembly as described in section 3-15.
4) Remove the drive gear (right) assembly as described in section 3-18.
5) Remove the drive gear (left) assembly as described in section 3-19.
6) Remove the two screws ❶, then remove the loading motor assembly ❷.
7) Remove the brake release arm ❸.
8) Remove the stopper washer ❹, then remove the wheel gear ❺.
9) Remove the worm assembly ❻ from the six claws ❼.

2. Installation (See Fig. 3-21.)

1) Mount the worm assembly ❻, matching it to the six claws ❼.
2) Grease the shaded parts of the worm assembly ❻ (five places) (see Fig A).
3) Apply half a drop of oil to the axle ❽ (See Fig. B).
4) Fit the wheel gear ❺ to the axle ❽ and engage it with the gear of the worm assembly ❻.
5) Mount the brake release arm ❸.
6) Grease the whole perimeter of the gear of the loading motor assembly ❷.
7) Align the loading motor assembly ❷ with the mechanism chassis and secure it with the two screws ❷.
8) Mount the drive gear (left) assembly as described in section 3-19.
9) Mount the drive gear (right) assembly as described in section 3-18.
10) Mount the timing belt (L), the RC gear assembly and the loading lever assembly as described in section 3-15.
11) Mount the switch lever assembly and the pinch roller sub arm assembly as described in section 3-14.
12) Mount the DC motor (capstan motor) as described in section 3-3.

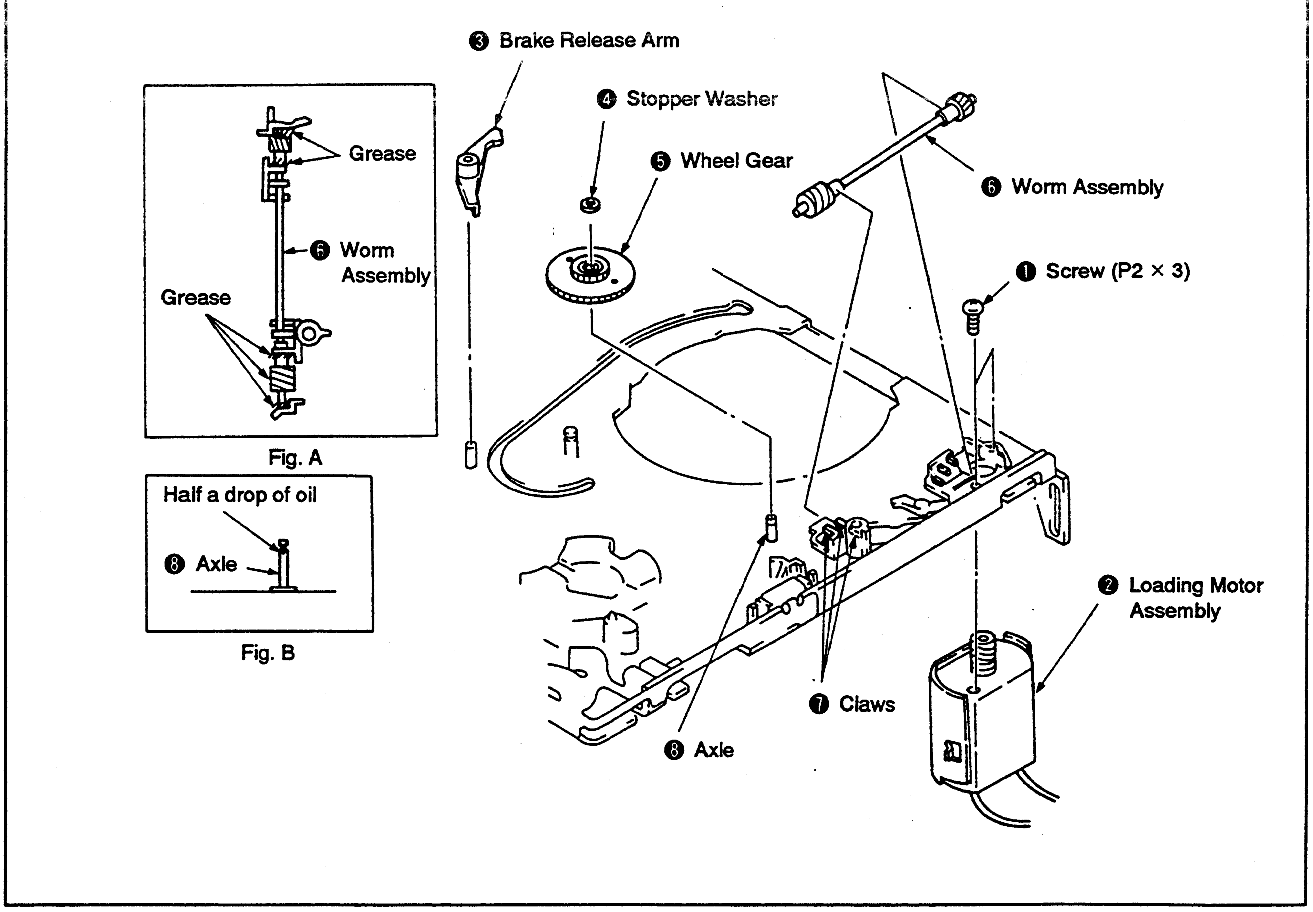


Fig. A

Fig. B

Fig. 3-21.

3-21. ROTARY UPPER DRUM REPLACEMENT

1. Removal

- If possible, make a recording before removal.

1) Detach the six solderings ⓐ, then use a pair of tweezers or the like to confirm that the terminals passing through the board holes from below can move freely.
2) Remove the two screws ❶ (See Fig. 3-22).
3) Mount the jig ❹ (Ref. No. J-7) with the two supplied screws ❷, then screw the attached hexagon socket screws ❸ to the jig ❹. The rotary upper drum ❺ will move upward and come off (See Fig. 3-23).

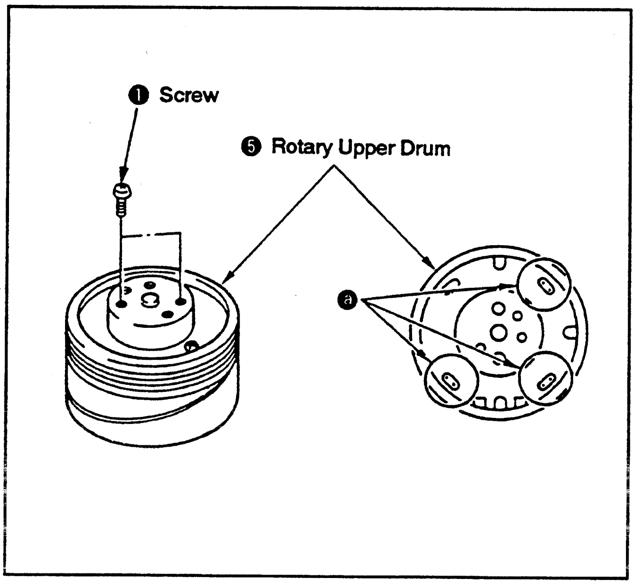


Fig. 3-22.

2. Installation

1) Wipe clean the flange surface and the rotary upper drum ❺ surface that makes contact with it, and confirm that they are free from dirt and scratches.
2) Insert the jig ❼ (Ref. No. J-7) into the drum positioning hole, then set the rotary upper drum ❺ by passing the jig through its positioning hole ❻.
   Note: Confirm that the terminals ❽ protrude slightly from the rotary upper drum board holes (See Fig. 3-24).
3) Remove the jig ❼ and push down the rotary upper drum ❺ gently by hand. If it does not go all the way down, secure it temporarily by tightening the two hexagon socket screws ❶ alternately.
4) Insert the jig ❼ into the positioning hole ❻ again and confirm that it goes in smoothly. If it does not, loosen the two screws ❶, repeat step 3 of the Removal paragraph and restart the setting procedure.
5) Tighten the screws ❶.
6) Solder the terminals ❽ (ⓐ in Fig. 3-22).
   Note: Take care that no solder flows below the board.

Note: After installing, be sure to perform tape path adjustment as described in section 4.

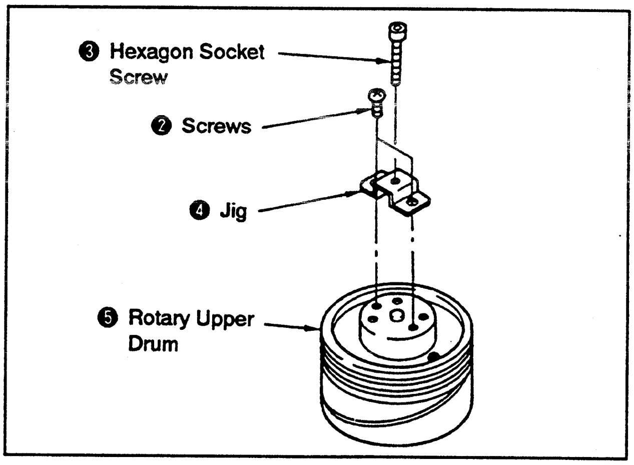


Fig. 3-23.

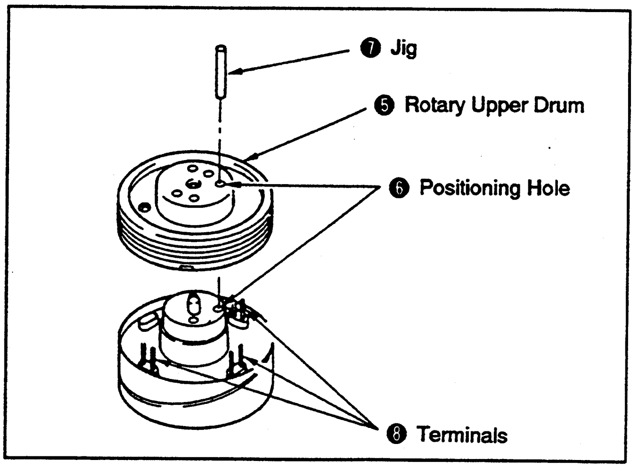


Fig. 3-24.

3-22. FWD BACK TENSION (See Fig. 3-25.)

1) Set the torque cassette (Ref. No. J-6).
2) Set the FWD mode and confirm that S reel table torque value is within 9 to 13 g•cm.
3) If the torque value does not meet the specification, adjust the adjust arm ❶.

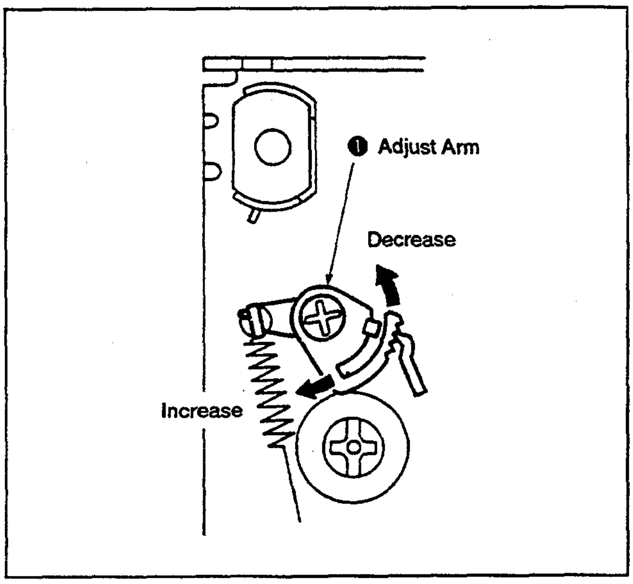


Fig. 3-25.

3-23. REEL TORQUE CHECK

1) Set the torque cassette.
2) Set the FWD mode and confirm that T reel table torque value is within 7 to 15 g•cm.
3) Set the REV mode and confirm that S reel table torque value is within 29 ± 6 g•cm.
4) Set the REV mode and confirm that T reel table torque value is within 13 to 25 g•cm.
5) If a torque value does not meet the specifications above, replace the corresponding reel table.

4. TAPE PATH ADJUSTMENT

[The Track Shift Mode]

In the 8 mm video system, instantaneous tape speed control is performed using four kinds of pilot signals, and high-precision tracking is achieved through the ATF (Automatic Track Finding) system. This makes a tracking control knob unnecessary and allows for precise tracing.

On the other hand, however, tape path adjustment presents some difficulties when the ATF system is used. Namely, since the ATF system will automatically compensate to some degree for head tracing errors, thorough adjustment is not possible.

This can be solved by setting the track shift mode for tracking fine adjustment. ATF will be compulsorily activated, shifting the tracking amount by a fixed amount (approx. 1/4) and thus making tracking fine adjustment easy. Furthermore, no track shift jigs are required.

4-1. TRACK SHIFT MODE SETTING

[Setting Procedure]

- Connect the TEST A and TEST B terminals to the COM terminal.

  Example:

  NTSC ········ GV-8

  PAL ·········· GV-8E

  Connect Pins ① and pin ③ of CN017 on the
  { SV-34 board (GV-8) / SV-35 board (GV-8E) } to pin ② of it. (See Fig. 4-1)

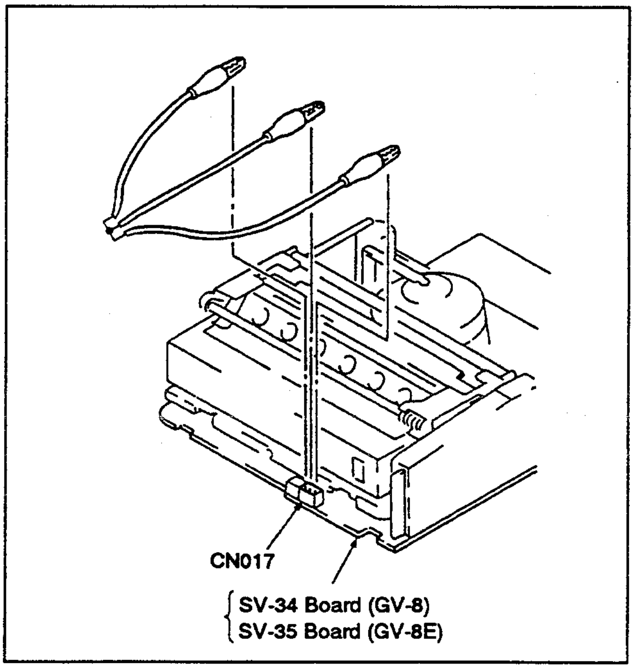
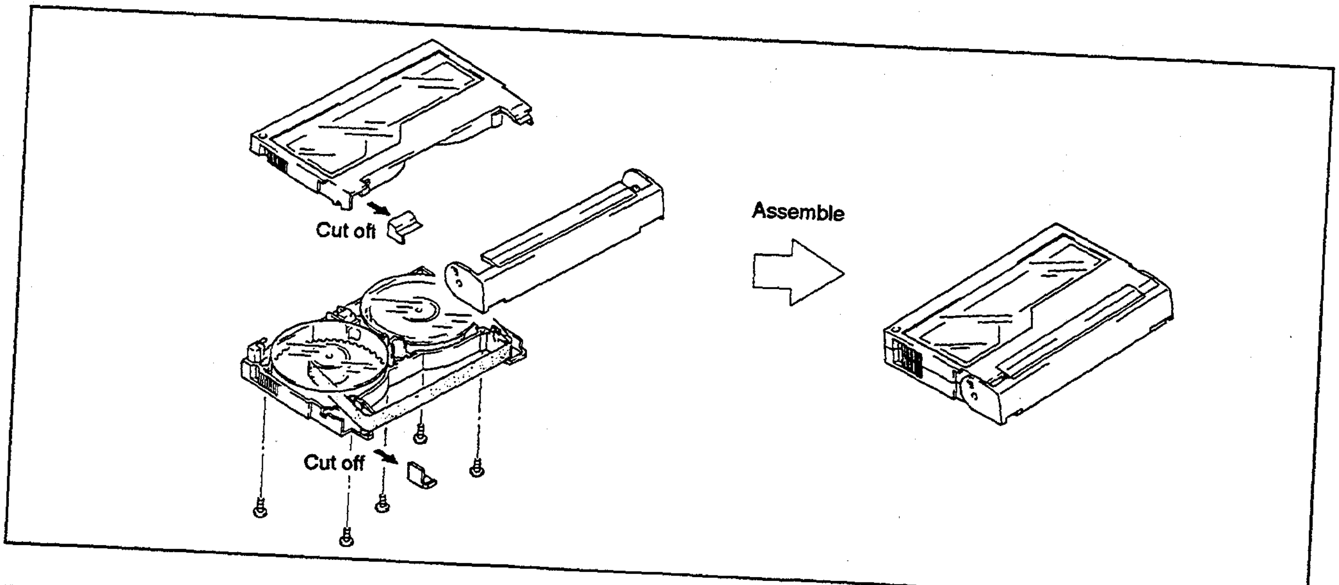


Fig. 4-1.

[Note on Adjustment of No.7 Guide (TG-7)]

The height adjustment screw for No.7 guide (TG-7) is located at some distance from the guide (refer to Fig. 4-2).
Therefore, when performing section 4-6. No.7 Guide (TG-7) Adjustment it is convenient to use the alignment tape for tracking (Ref. No. J-5), modified as follows, and perform adjustment in playback mode.


Cut off
Assemble
Cut off

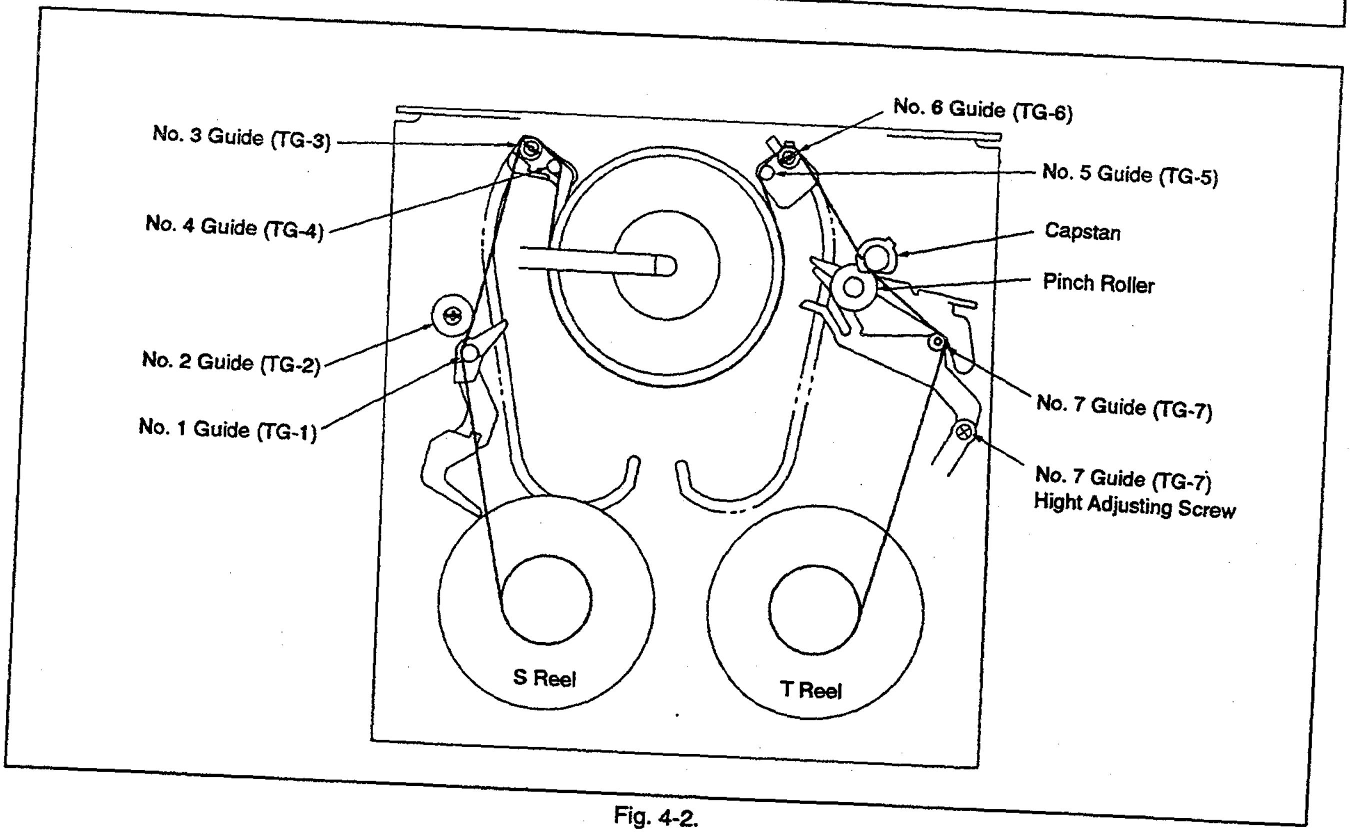

No. 3 Guide (TG-3)
No. 4 Guide (TG-4)
No. 2 Guide (TG-2)
No. 1 Guide (TG-1)
No. 6 Guide (TG-6)
No. 5 Guide (TG-5)
Capstan
Pinch Roller
No. 7 Guide (TG-7)
No. 7 Guide (TG-7)
Hight Adjusting Screw
S Reel
T Reel

Fig. 4-2.

4-2. PREPARATIONS FOR ADJUSTMENT

1) Clean tape path surfaces (tape guides, drum, capstan shaft, pinch roller) (See Fig. 4-2).
2) Connection of oscilloscope and output method of waveform.
   CH 1: RF signal output of the drum head (V RF OUT)
   Method for signal output:
   Short-circuit the external trigger output (RF SW. P) and GND.

   Example:
   NTSC ····· GV-8
   PAL ······· GV-8E
   CH 1: Pin ③ (V RF OUT) of CN018 on the
   { SV-34 board (GV-8)
   { SV-35 board (GV-8E)
   Method for signal output:
   Short-circuit pin ① (GND) and pin ② (RF SW.P) of CN018 on the
   { SV-34 board (GV-8)
   { SV-35 board (GV-8E)
3) Play back the alignment tape for tracking adjustment (Ref. No. J-5).
4) Confirm that both the entrance and exit side RF waveforms of the oscilloscope are flat (See Fig. 4-4). If they are not, adjust as follows.

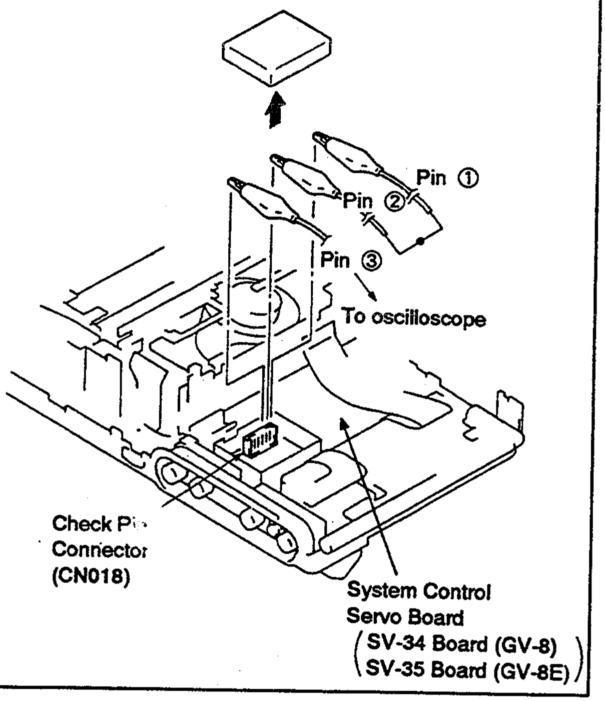

Pin ①
Pin ②
Pin ③
To oscilloscope
Check Pin Connector (CN018)
System Control Servo Board
(SV-34 Board (GV-8)
SV-35 Board (GV-8E))

Fig. 4-3.

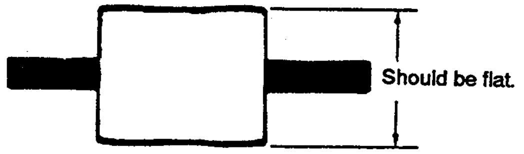

Should be flat.

Fig. 4-4.

4-3. TRACKING ADJUSTMENT (See Fig. 4-5.)

1) Play back the alignment tape for tracking adjustment.
2) Pass a hexagonal wrench, screwdriver (Ref. No. J-11) or the like through the hole ❶, loosen the lockscrew ❷ a little, then make the entrance side waveform flat by turning the No. 3 guide (TG-3) ❸.
3) Pass a hexagonal wrench, screwdriver or the like through the hole ❹, loosen the lockscrew ❺ a little, then make the exit side waveform flat by turning the No. 6 guide (TG-6) ❻.

Note: Take care not to loosen lockscrews too much, since guides come loose easily.

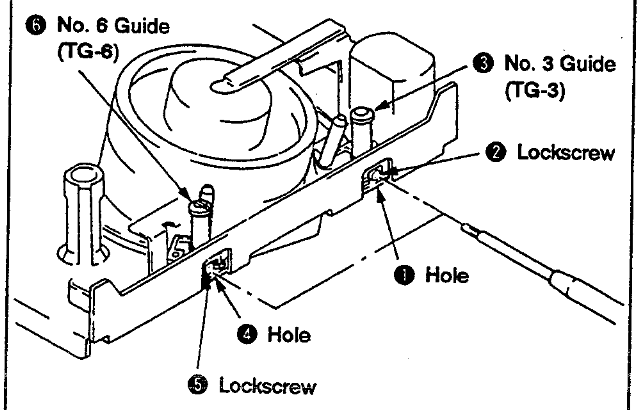

❻ No. 6 Guide (TG-6)
❸ No. 3 Guide (TG-3)
❷ Lockscrew
❶ Hole
❹ Hole
❺ Lockscrew

Fig. 4-5.

4-4. TRACKING FINE ADJUSTMENT (See Figs. 4-5. and 4-6.)

1) Play back the alignment tape for tracking adjustment and set the track shift mode.
2) Confirm whether the waveform is flat. If it is not, turn the No. 3 (TG-3) and No. 6 (TG-6) guides so that it becomes flat.
3) Fix the No. 3 guide ❸ by tightening its lockscrew ❷. Then confirm that the entrance side waveform has not changed.
4) Fix the No. 6 guide ❻ by tightening its lockscrew ❺. Then confirm that the exit side waveform has not changed.

Note: The set screws ❷ and ❺ should be tightened with a tightening torgue of approx. 200g•cm ± 10%.
If tightened too much, there is danger of damaging the thread.

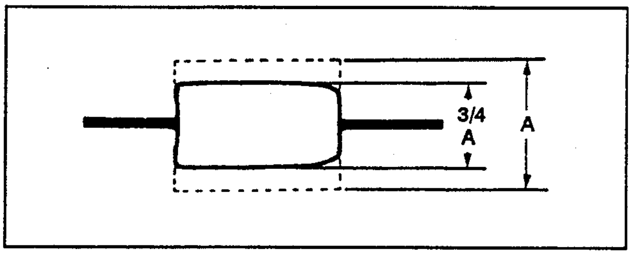


Fig. 4-6.

4-5. No. 2 GUIDE (TG-2) ADJUSTMENT

When the No. 2 guide has been turned or replaced, perform height presetting before this adjustment.

4-5-1. No. 2 Guide (TG-2) Height Presetting (See Fig. 4-7.)

1) Adjust the height from the mechanism chassis upper surface to the TG-2 upper flange ❶ upper surface to 18.6 mm by rotating the TG-2 upper flange ❶.

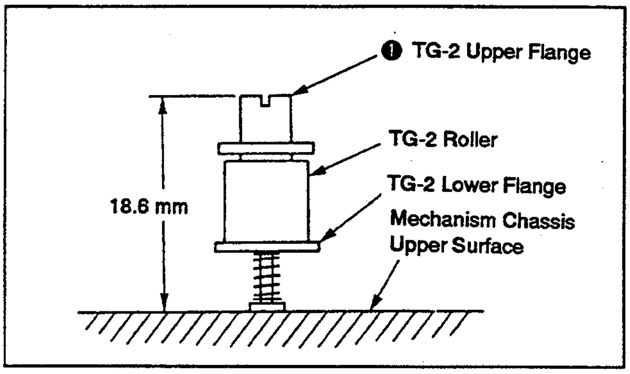


Fig. 4-7.

[Reference]
This U mechanism is equipped with four adjustable guides (TG-2, 3, 6 and 7). To raise or lower the respective guide rotate the corresponding adjustment screw as shown below.

Guide	Guide adjustment	Rotating direction of adjustment screw
TG-2, 3, 6	Raise	Counterclockwise
	Lower	Clockwise
TG-7	Raise	Counterclockwise
	Lower	Clockwise

4-5-2. No. 2 Guide (TG-2) Adjustment
(See Figs. 4-8. and 4-9.)

1) Play back a thin tape like the P6-120MP, etc. and set the REV mode.
2) Confirm that the tape is not bent at the lower flange ❷ of the No. 2 guide (TG-2) ❶ (See Fig. 4-8). If it is, turn the upper flange ❸ of the No. 2 guide (TG-2) ❶ clockwise with a screwdriver, lowering it until the tape is straightened.
3) Play back the alignment tape for tracking adjustment.
4) Perform tracking adjustment and tracking fine adjustment as described in sections 4-3. and 4-4.
5) In the track shift mode, CUE/REV the tape, then play it back and confirm that the RF waveform rises flat within 2 seconds.
6) If the waveform is not normal (See Fig. 4-9), turn the upper flange ❸ of the No. 2 guide (TG-2) ❶ 90° counter-clockwise and repeat step 5.
   Repeat steps 5 and 6 until a normal waveform is obtained. Then, confirm that the tracking waveform has not changed. If it has, perform fine adjustment of entrance side tracking and repeat step 5.

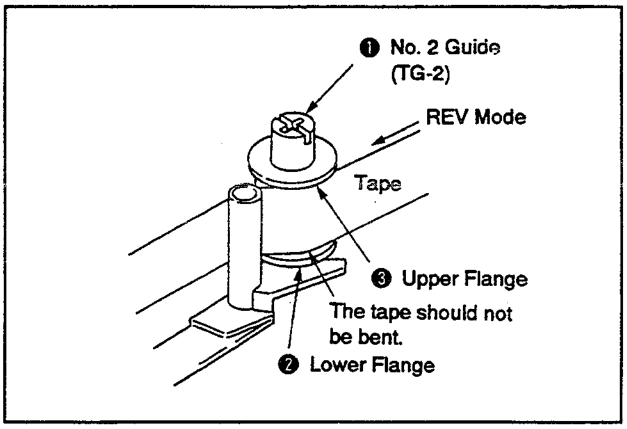

❶ No. 2 Guide
(TG-2)
REV Mode
Tape
❸ Upper Flange
The tape should not be bent.
❷ Lower Flange

Fig. 4-8.

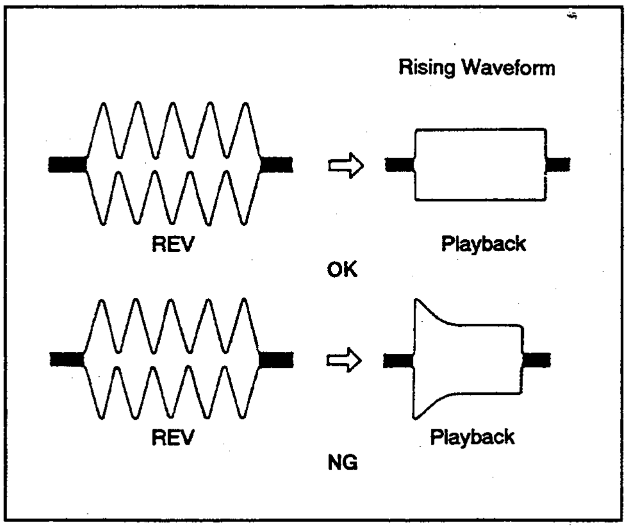

Rising Waveform
REV
Playback
OK
REV
Playback
NG

Fig. 4-9.

4-6. No. 7 GUIDE (TG-7) ADJUSTMENT
(See Fig. 4-10.)

1) Play back the alignment tape for tracking adjustment and set the REV mode.
2) Confirm that the tape is not bent between the No. 6 guide (TG-6) ❶ and the capstan ❷ . If it is, turn the hight adjusting screw ❹ of the No. 7 guide (TG-7) ❸ until the tape is straightened.
3) Set the playback mode again and confirm that the tape is not bent between the capstan ❷ and the hight adjusting screw ❹ of the No. 7 guide (specification:0.5 mm or less) . If the tape is bent beyond the specification, turn the No. 7 guide (TG-7) ❸ until bending is within the specification (0.5 mm).
   If in the REV mode tape bending between the No. 6 guide (TG-6) ❶ and the capstan ❷ is 0.3 mm or less, adjustment can be considered completed.

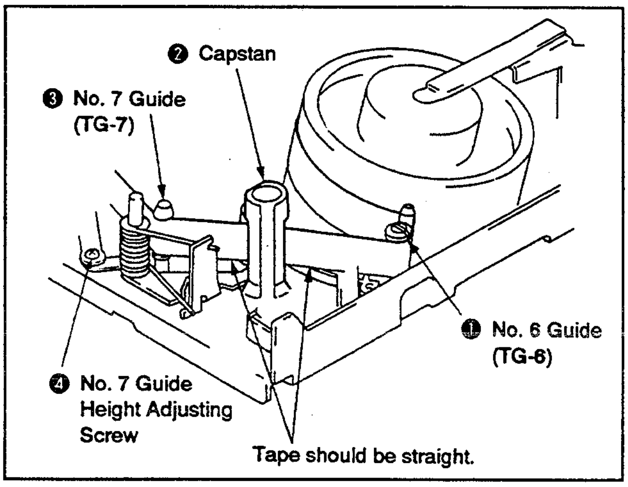

❷ Capstan
❸ No. 7 Guide
(TG-7)
❶ No. 6 Guide
(TG-6)
❹ No. 7 Guide
Height Adjusting
Screw
Tape should be straight.

Fig. 4-10.

4-7. CUE AND REV WAVEFORM CHECK (See Fig. 4-11.)

1) Play back the alignment tape for tracking adjustment and set the REV mode. Confirm that waveform peaks maintain a constant pitch of 5 seconds or more (See Fig. 4-11). In case pitch is not constant, perform section 4-4. Tracking Fine Adjustment and section 4-6. No. 7 Guide Adjustment.
2) Set the CUE mode. Confirm that waveform peaks still maintain a constant pitch of 5 seconds or more (See Fig. 4-11). Otherwise, perform section 4-4. Tracking Fine Adjustment.

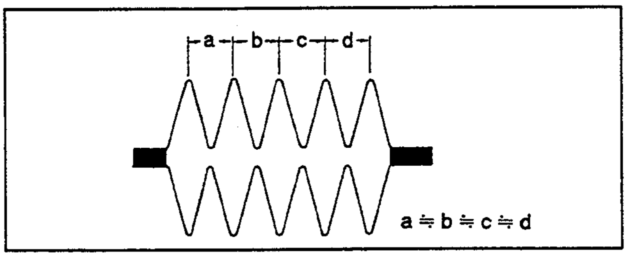


Fig. 4-11.

4-8. CHECK AFTER ADJUSTMENT

4-8-1. Tracking Check

1) Confirm that the amplitude of RF waveform is reduced to approx. 3/4 when the track shift mode is set (See Fig. 4-12).
2) Then, confirm that the minimum amplitude value (EMIN) is 65% of the maximum value (EMAX) or larger (See Fig. 4-13).
3) Confirm that no large fluctuations occur on the waveform (See Fig. 4-14).

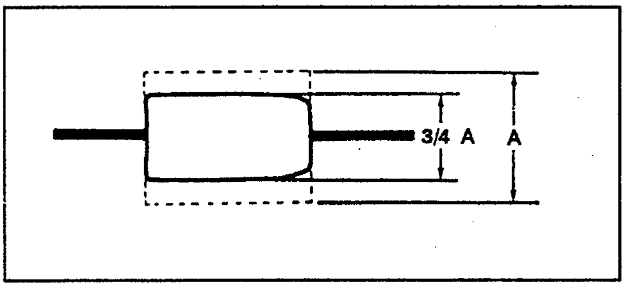


Fig. 4-12.

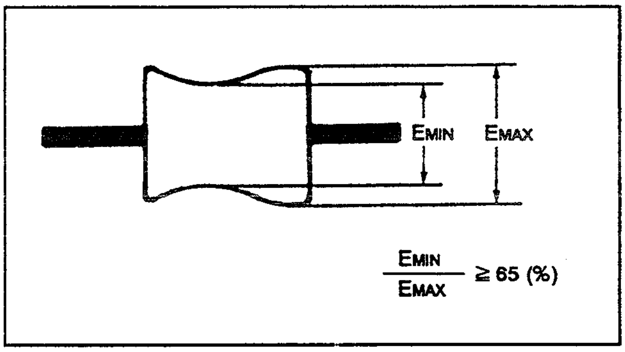


Fig. 4-13.

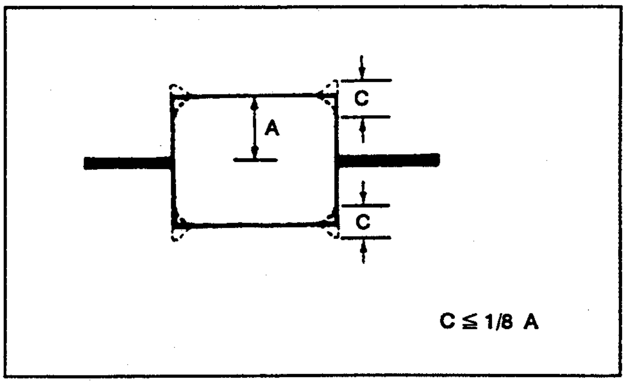


Fig. 4-14.

4-8-2. Rising Check (See Fig. 4-15.)

1) Play back the alignment tape for tracking adjustment.
2) Cancel the track shift mode.
3) Eject the tape, then load it again.
4) Set the playback mode and confirm that the RF waveform rises flat within 2 seconds. Also confirm that the tape is not bent around the pinch roller (See Fig. 4-15).
5) CUE/REV and FF/REW the tape, then play it back and confirm that the RF waveform rises flat within 2 seconds. Also confirm that the tape is not bent around the pinch roller.
6) Repeat steps 3) to 5) once more.

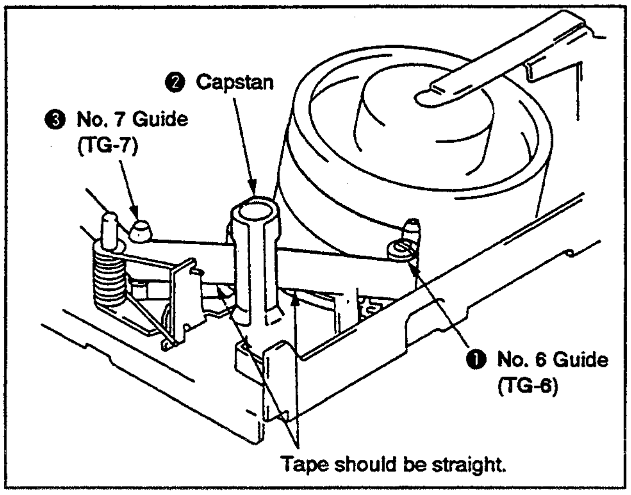

❷ Capstan
❸ No. 7 Guide (TG-7)
❶ No. 6 Guide (TG-6)
Tape should be straight.

Fig. 4-15.

4-8-3. Tape Path Check (See Fig. 4-16.)

1) Play back a thin tape like the P6-120MP (NTSC) or P5-90MP (PAL), etc. and confirm that no tape rising occurs, and that curling is less than 0.3 mm, at the lower flange of the No. 2 guide, the upper flange of the No. 3 guide, the upper flange of the No. 6 guide and the No. 7 guide upper and lower flanges.
2) Confirm that no tape rising occurs and that curling is less than 0.3 mm at the flanges of all guide when pressing the FF button in the playback mode to set the CUE mode, or the REW button to set the REV mode.

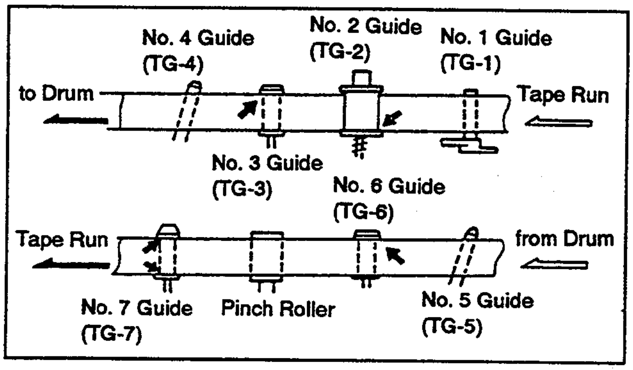

No. 4 Guide (TG-4)
No. 2 Guide (TG-2)
No. 1 Guide (TG-1)
to Drum
Tape Run
No. 3 Guide (TG-3)
No. 6 Guide (TG-6)
Tape Run
from Drum
No. 7 Guide (TG-7)
Pinch Roller
No. 5 Guide (TG-5)

Fig. 4-16.